Initial Environmental Examination

September 2014

SRI: Integrated Road Investment Program – Project 2

RMC

Prepared by Environmental and Social Development Division, Road Development Authority, Ministry of Highways, Ports and Shipping for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 12 September 2014)

Currency unit	–	Sri Lanka rupee (SLRe/SLRs)
SLRe1.00	=	$ 0.00767
$1.00	=	SLR 130.300

ABBREVIATIONS

ABC	-	Aggregate Base Coarse
AC	-	Asphalt Concrete
ADB	-	Asian Development Bank
CBO	-	Community Based Organizations
CEA	-	Central Environmental Authority
DoF	-	Department of Forest
DSDs	-	Divisional Secretary Divisions
DOFC	-	Department of Forest Conservation
DWLC	-	Department of Wild Life Conservation
EC	-	Environmental Checklist
EIA	-	Environmental Impact Assessment
EMoP	-	Environmental Monitoring Plan
EMP	-	Environmental Management Plan
EPL	-	Environmental Protection License
ESDD	-	Environmental and Social Development Division
FBO	-	Farmer Based Organizations
GoSL	-	Government of Sri Lanka
GRC	-	Grievance Redress Committee
GRM	-	Grievance Redress Mechanism
GSMB	-	Geological Survey and Mines Bureau
IEE	-	Initial Environmental Examination
LAA	-	Land Acquisition Act
MOHPS	-	Ministry of Highways, Ports and Shipping
NAAQS	-	National Ambient Air Quality Standards
NBRO	-	National Building Research Organization
NEA	-	National Environmental Act
NWS&DB	-	National Water Supply and Drainage Board
OPRC	-	Output and Performance - based Road Contract
PIC	-	Project Implementation Consultant
PIU	-	Project Implementation Unit
PRDA	-	Provincial Road Development Authority
PS	-	Pradeshiya Sabha
RDA	-	Road Development Authority
ROW	-	Right of Way
TOR	-	Terms of Reference

NOTE

In this report, "$" refers to US dollars unless otherwise stated.

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EXECUTIVE SUMMARY

1. The Integrated Investment Program (iROAD) is proposed by the Road Development Authority (RDA) under Ministry of Highways, Ports and Shipping (MOHPS) to improve transport connectivity between rural communities and socioeconomic centers. iROAD intends to connect 1,000 Grama Niladari Divisions1 (GNDs) throughout the country as rural hubs and link them to trunk road network to all weather standards, and operating a sustainable trunk road network of at least fair condition. The iROAD will be financed by the Asian Development Bank (ADB) under a Multi tranche Financing Facility (MFF) to have four tranches implemented over ten years. Tranche 2 covers: Sabaragamuwa, Kaluthara District of Western Province, North Western, Central, and North Central Provinces.

2. The first tranche focused on improving roads in the Southern Province. Tranche II roads of iROAD are located in Ratnapura and Kegalle districts of Sabargamuwa Province, Kandy, Matale and Nuwara Eliya districts of Central Province, Anuradhapura and Polonnaruwa districts of North Central Province, Puttalam and Kurunegala districts of North West Province and Kaluthara district of Western Province. Tranche II also involves improving national or Class A roads under road management contract (RMC). This IEE report focuses on these national roads.

3. The RMC addresses the issue of inadequate incentives. During the bidding process, contractors compete among each other by essentially proposing fixed lump-sum prices for bringing the road to a certain service level and then maintaining it at that level for a relatively long period. It is important to understand that contractors are not paid directly for “inputs” or physical works (which they will undoubtedly have to carry out), but for achieving specified service levels, i.e., the rehabilitation of the road to pre-defined standards (if so required by the bidding documents), the maintenance service of ensuring certain service levels on the roads under contract, and specific improvements (if so required by the bidding documents), all representing outputs or outcomes. A monthly lump-sum remuneration paid to the Contractor will cover all physical and non-physical maintenance services provided by the Contractor, except for unforeseen emergency works which are remunerated separately. Maintaining a road includes both routine and periodic tasks. Routine maintenance consists of many different tasks frequently necessary to maintain the function of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.).

4. The proposed RMC upgrading will include: improvement, rehabilitation, and maintenance of existing Class A national road to all weather standards with two lanes facility, surfacing the existing pavement with asphalt concrete (AC) if the present surface is weak, repair or reconstruct damaged culverts introduce earth drains for all road sections and built up drains where necessary, removal of any irregularities that are on the existing vertical profile, provide road safety appurtenances.

5. iRoad was classified as environmental category B based on the ADB Rapid Environmental Assessment checklist for roads and highways. This Initial Environmental Examination (IEE) report was prepared consistent with the ADB Safeguard Policy Statement (SPS) 2009 and the Environmental Safeguards Compliance Manual of RDA. Key national environmental laws and regulations that guided the environmental assessment includes: National Environment Act (NEA) No. 47; Coast Conservation Act No 57 of 1981, National environmental protection and quality regulations; National Environmental (Protection and Quality) Regulation No. 1 of 1990; National Environmental (Ambient Air Quality) Regulations, 1994; National Environmental (Noise Control) Regulations No.1 of 1996; Fauna and Flora

Protection Act (FFPO) No.2 of 1937; Forest Act No. 34 of 1951; Felling of Trees Control Act No. 9 of 1951; Soil Conservation Act, No. 25 of 1951; Explosives Act No. 36 of 1976; Buddhist Temporalities Ordinance No. 19 of 1931; and Antiquities Ordinance No. 9 of 1940, among others.

6. As provided in the EARF, no road under Tranche 2 is located inside strict national reserve. There will be no road widening inside legally protected or critical habitat. All project roads adjacent to protected or eco-sensitive areas are limited to existing RoW. Most environmental impacts attributed to the project and related activities are short-term, site-specific, and easily mitigated. Close coordination with the Department of Wildlife Conservation, Forest Department, and ADB were made in the screening of the roads to ensure the project will cause not significant adverse environmental impacts that will trigger an ADB environment "Category A" tranche or Prescribed Project classification consistent with domestic environmental laws and regulations

7. In developing RMC road scope of work, community participation and consultation were conducted through the transect walk. Transect walks were organized in close coordination with the Grama Niladari concerned at village level and Divisional Secretary at divisional level. In doing this, the project team and key informants conduct a walk along the road, to listen, to identify issues, and conditions and to ask questions to identify possible solutions. The field assessment was followed by preparation of Environmental Checklist (EC) for each RMC road section, namely: Nittambuwa to Warakapola, Warakapola to Mawanella, and Mawanella-Kandy all part of A001 national road; Katugastota to Galagedara, and Galagedara to Kurunegala of A010 national road; and Peradeniya to Katugastota section of B365 national road. This IEE report describes all the environmental settings of provinces and districts traversed by the RMC roads and summarized findings of each EC.

8. Consultations with stakeholders during the environmental examination involved local communities and government agencies like the Department of Wildlife Conservation (DWLC) and national UNESCO office to define boundaries of protected areas and ensure these are not breached by any of the RMC roads. The A001 national road section of the project will not encroached inside the Sacred City of Kandy, a UNESCO World Heritage Site. Further, no encroachment on sanctuary, parks, and similar ecologically sensitive areas was made by RMC project roads. During project implementation, signboards with project information detailing the nature of construction works, road length, construction period, name of contractor, contract sum and contact information for reporting complaints or grievances will be posted in three languages (Sinhala, Tamil and English) for the rural roads. Annual environmental monitoring reports will be prepared per province and submitted to ADB for disclosure on the ADB website.

A. Physical Environment

9. Soils. All RMC roads, except for a short section in Kurunegala, are located on areas that have wet condition experiencing rainfall most of the time. Rich agricultural soils abound in the project area with the preponderance of Rich Brown Latasol (RBL) and Immature Brown Loam (IBL) that are highly suitable for rice farming.

10. Rainfall. Rainfall distribution is influenced by monsoon winds from the Indian Ocean and the Bay of Bengal. Kandy District of the Central Province and Gampaha District of the Western Province receive sufficient rainfall from the southwest monsoon from May to September and relatively low rainfall from northeast monsoon from December to February and relatively dry

from end of January to early March. Kurunegala and Kegalle receive fairly good rainfall from both monsoons.

11. Hydrology. The RMC roads are traversed Mahawli River in Kandy District, longest river in Sri Lanka, and DaduruOya and Maha Oya. Small stream like the Dee ella Oya, crosses the road section of Nittambuwa to Warakapola at Pasyala.

12. The RMC roads pass through heavily built-up areas with heavy traffic and congestions particularly in the cities and townships and air quality is expected to be below standards. No baseline air quality was taken along RMC roads but several studies supports a deteriorating air condition along high capacity roads suffering from congestion. In the Colombo Fort PM10 concentrations are continuously higher than WHO guide values. In Kandy City, better air quality condition was reported and generally in good condition.

B. Natural Disasters

13. Excessive rainfall, landform and geology, unsustainable land use practices, deforestation, collectively contribute to create landslide hazards particularly during the monsoon rains in the mountainous slopes of the central and south western regions of the country. Major landslides have occurred in January 1986, May-June 1989, October 1998 and May 2003 in Kegalle and Kandy.

C. Ecological Environment

14. No forest reserves, national parks, sanctuaries are located along or near any of the project roads in Central province

D. Socio-Economic Environment

15. **Population and population density.** Total population in the project district is about 6.5 million as of 2012. In terms of population density, Gampaha district is the most dense at 1,714 persons/km2, in contrast Kurunegala is the least populated at 338 persons/km2. By far, the majority of population are living in rural areas, and about 10% live in urban area

16. **Ethnicity.** Majority of the population in the project area are Sinhalese followed by Muslim, Sri Lankan Tamils, and Indian Tamils accounting for 99.7% of the total and individually brings 86.5%, 7.5%, 3.1%, and 2,3%, respectively.

17. **Main economic activities.** The services sector is the main employer in the project provinces and the nation as a whole accounting for 46.1%, and 66.4%, respectively. At the Provincial level, Gampaha has the most number of its population employed in the service sector at 52.5% while the least is Kurunegala with 36.6%. Industrial employment is largest in Gampaha at 40.8% while the least is Kandy at 27%.

18. **Literacy.** Gampaha district has the highest literacy rate about 96.9 % and the least is Kandy at 92.4% which is slightly lower than the national average of 92.7%.

19. **Household income.** The highest monthly mean per capita income in the project districts is Gampaha at Rs12,300 which is 35% higher than the national average of Rs.9,104 while the lowest is Kegalle at Rs7,457.

20. **Employment.** Kurunegala and Kegalle districts have higher labor participation rate than the national average. Women in 3 of the four districts have higher participation that the national average. Unemployment is highest in Kandy and lowest in Kegalle.

21. **Poverty.** Across the project districts the poverty had count index is decreasing. Kandy and Kegalle Districts achieved dramatic poverty reduction from more than 30% to less than7% during the past 13 years. All project districts are either better performing or at par with the national average of 6.7% poverty headcount index.

22. **Energy source.** Electricity and kerosene are the main source of energy used for lighting the households accounting roughly 88% and 7% of the total district population.

23. **Drinking water.** Majority of households in the project districts use water from protected wells and pipe borne water for drinking purpose. Kandy District has the most developed domestic water supply system with 50% of the household having access while Kurunegala District relies more on protected well at 60%.

24. **Sanitation.** All project districts have higher percentage of its population having project toilets than the national average of 86.4%.

25. **Education.** Of the 9,525schools in the country almost 27% are located in the project districts. Girls and boys school and almost equally divided in the project district except in Gampaha where the ratio is 2:1. The number of mixed schools by district varies with Kurunegala having the most at 862 while Gampaha has the least at 503.

E. Anticipated Environmental Impacts and Proposed Mitigation Measures

26. **Pre-construction stage.** Environmental impacts related to project siting in flood and erosion prone areas, and shifting of utilities were addressed. Hydrologic studies allowed the proper design of culverts to have adequate capacities based on 50-year flood return periods. Collected data and structural designs were validated by the Irrigation Department in collecting information and checking the adequacy of design, conducting construction operations during dry weather flow are possible mitigation measures. RMC road sections located in rolling and hilly terrain were identified and screened for susceptibility to erosion and counter measures were designed in consultation with the National Building Research Organization (NBRO). The need to safely shift electric power and telephone lines, and water supply mains along the ROW were defined for each road project. Detailed inventory, co-ordination with the concerned authorities, and the need for public notification forms part of the detailed EMPs. The Mawanela-Kandy road section will not encroach inside the Sacred City of Kandy as defined by UNESCO.

27. **Construction phase.** Significant environmental impacts anticipated during construction phase are: (i) increase of local air pollution, noise and vibration from earthworks, pavement improvement operations, quarry operations, operation of hot mix plants, and operation of construction vehicles; (ii) deterioration of surface water quality due to silt runoff, emissions and spoil from labour camps; (iii) landslides; (iv) social and health impacts from labour camps; (v) disruption to access/traffic; (vi) loss of avenue trees; (vii) alteration of hydrology due to siltation of streams and (viii) occupational health and community safety. Principal mitigation measures imbedded in the EMP includes: (i) utilizing least noisy equipment and timing of equipment operation to reduce noise impacts; (ii) sprinkling of water on material storage and handling areas and unpaved road travel to control dust; (iii) installation of silt and oil traps, and avoiding

storage of materials near water bodies to avoid contamination of receiving waters; (iv) bioengineering and slope stabilization to control erosion; (v) locate camps at least 100m away from water resources, provide septic tanks to treat wastewater, and link with local health programs on prevention and control of communicable diseases; (vi) maximize the hiring of local labor to avoid the establishment of big labor camps; (vii) traffic management to avoid congestion and maintain access of local residents; (viii) implement 1:3 compensatory plantation to off-set impacts from tree cutting; (ix) no camp, materials storage, hot mix plant will be allowed near the national park; (x) provision of personal protective equipment to all workers.

28. **Operation Phase.** Environmental impacts during operation and less significant involving the potential deterioration of water bodies from oil-contaminated runoff, disposal of debris and waste collected along the roadside including drainage canals, road crashes, and deterioration of air quality. Mitigation measures include regular maintenance of road drain and proper disposal of collected derbris, provision of road safety appurtenances in the road design, and avenue plantation to control noise.

29. **Greenhouse gas emissions and addressing risk of climate change.** Using the Transport Emissions Evaluation Model for Projects (TEEMP) total annual emission was estimated at 16,067 tons which is less than the 100,000 tons per year threshold set by ADB. The projected variations in temperature and precipitation the project roads indicated vulnerability to these climate risks: landslide triggered by increased precipitation, fire, flood, drought, tsunami, cyclone wind, cyclone surge, sea level rise, and coastal erosion.

30. **EMP implementation.** The Ministry of Highways, Ports and Shipping (MOHPS) is the Executing Agency (EA) and RDA is the Implementing Agency and within RDA there will be a Project Implementation Unit (PIU). The PIU will be responsible for implementing the project and managing detailed design and supervision of the construction works and ensuring that all environmental safeguard requirements in accordance with this EARF are met. The PIU will be headed by a full time Project Director (PD) and supported by a team of engineers from RDA. The PIU will have a safeguards team with sufficient social and environment safeguards officers to cover the quantum and geographic distribution of works in all provinces under the investment program. The Project Implementation Consultants (PIC) will support the PIU for supervision of the design and construction works by the civil works contractor. The PIC team will include a team of environment safeguards consultants for conduction of regular monitoring of safeguards implementation on site.

31. **Environmental Management and Monitoring Plans.** A standard EMP was prepared as part of the IEE report, however, contract package specific EMP's will be prepared by the contractor by ij consonance to the standard EMP, road specific information in the environmental checklists and the detailed design (level 1 design). All costs for implementing the mitigation measures will be included in the Bill of Quantities (BOQ) by the contractor as implementation of the EMP will be the responsibility of the contractor. Contractors who implement rural road components will have a construction period of approximately two years and routine maintenance for three years. Monitoring of EMP implementation will be carried out during the preconstruction, construction, and operation and maintenance stages of the project. Based on the EMP, environmental monitoring checklists (EMC) will be prepared by the PIC for each of these stages. The EMC monitors the degree of compliance of the mitigation measures proposed in the EMP in all three stages. Every road must have at least one EMC completed during pre-construction, one to three during construction depending on the length of the road and one per year during operation and maintenance. Based on these records and site visits monitoring reports will be prepared during the construction and operation stage on an annual basis per

province and submitted to ADB for disclosure on the ADB website. An Environmental Monitoring Plan (EMoP) provides the guidance to contractor and PIU on monitoring environmental quality and implementation of the EMP. Furthermore the contractor will also be responsible for updating EMP and EMOP if there are any significant changes in the project site conditions or engineering design.

32. **Grievance Redress Mechanism.** Starts at the grass roots level where complaints are received and addressed by the contractor, PIC or PIU representative on site. Grievances that are not immediately resolved are elevated to the Grama Niladhari (GN) levels and Divisional Secretariat (DS) level for final resolution.

F. Conclusion and Recommendations

33. The proposed iROAD subproject has been categorized as Category 'B' based on environmental screening and assessment of likely impacts while the initial environmental examination ascertains that it is unlikely to cause any significant environmental impacts. Few impacts were identified attributable to the proposed subproject, all of which are localized and temporary in nature and easy to mitigate.

34. The screening criteria ensure no road will cause significant adverse impacts. iROAD ensures no project road will trigger classification as an environment 'Category A' tranche in accordance with the ADB's SPS (2009); no project roads falling in part or whole inside a protected area will be selected under the investment program; (iii) project roads falling adjacent to protected areas or eco-sensitive areas will be included only if there is no widening of the road "Right of Way" (ROW) or acquiring of land from the protected area or eco-sensitive area. Further, no road section is located inside or near internationally of nationally known archeological site, including UNESCO World Heritage Site.

35. Candidate roads are dispersed over the entire province and few road sections are located near or within geologically and hydrologically sensitive entities therefore mitigation measures will be incorporated to designs in order to bare any road related impacts at such locations. No roads are located in or adjacent to environmental sensitive areas declared by the DOFC and DWLC.

36. The initial environmental examination has discussed various aspects of the proposed rehabilitation and upgrading of sections of A001, A010, and B365 national roads with a total length of 117.7 kms. Contractors are liable to keep the roads in operational status for approximately 3 years after the 2 years of construction period.

37. The IEE recommends to update EMP and EMC with package specific information and locations while EMOP to be road specific before commencement of construction activities. In addition EMC and EMOP should be effectively implemented in order to monitor application of the EMP.

38. The road network improvement proposed for selected sections of RMC roads will boost economic activities in the province including potential growth in industries, tourism, gem industry and agriculture in lagging rural areas which will be a positive step to the socio economic development of the country.

I. INTRODUCTION

A. Background

1. In Sri Lanka, about 85% of the population is living in the rural and peri urban sector and out of that 84.7% are identified as poor. Poverty is concentrated in areas where connectivity to towns and markets, access to electricity and average educational attainment are relatively low and agricultural labour is an important source of employment. Location attributes are highly correlated with each other, which indicate the many-sided nature of challenges faced by poor areas. Remote areas with lack of all-weather access to the socioeconomic centres have rendered a large portion of the rural population with poor agricultural productivity, limited employment opportunities and slow economic growth.

2. In order to address this problem and improve transport connectivity between rural communities and socioeconomic centres, the Road Development Authority (RDA) under Ministry of Highways, Ports and Shipping (MOHPS) has proposed an Integrated Road Investment Program (iRoad). The Government would like to select about 1000 Grama Niladari Divisions6 (GNDs) throughout the country as rural hubs according to the population, development potential and distance to trunk road network. As a first step for developing the rural hubs the government will enhance the connectivity by (i) improving rural access roads linking the rural hubs to trunk road network to all weather standards, and (ii) operating a sustainable trunk road network of at least fair condition.

3. The iRoad program will be financed by the Asian Development Bank (ADB) under a Multi tranche Financing Facility (MFF). The investment program is planned to have four tranches that will be implemented over a period of ten years. An Environmental Assessment and Review Framework (EARF) has been prepared to guide selection, screening, categorization, impact assessments, project implementation and monitoring of environment safeguards according to requirements of the Government of Sri Lanka (GoSL) as well as the ADB Safeguard Policy Statement (SPS) for succeeding tranches and their project roads under the investment program.

4. The first tranche focused on improving roads in the Southern Province. Tranche II focuses on 5 provinces, namely: Sabaragamuwa, Central, North Central, North Western, and Western Province. The Program also involves improving national or Class A roads under road management contract (RMC) in Kandy District of the Central Province, Kegalle District of Sabaragamuwa Province, Gampaha District of Western Province, and Kurunegala of North Western Province. This IEE report focuses on these national roads.

5. Road management contract (RMC) is designed to increase the efficiency and effectiveness of road asset management and maintenance. It ensures that the physical condition of the roads under contract is adequate for the need of road users, over the entire period of the contract which could possibly reach 7 years. This type of contract significantly expands the role of the private sector, from the simple execution of works to the management and conservation of road assets.

6. The RMC addresses the issue of inadequate incentives. During the bidding process, contractors compete among each other by essentially proposing fixed lump-sum prices for bringing the road to a certain service level and then maintaining it at that level for a relatively long period. It is important to understand that contractors are not paid directly for “inputs” or physical works (which they will undoubtedly have to carry out), but for achieving specified

service levels, i.e., the rehabilitation of the road to pre-defined standards (if so required by the bidding documents), the maintenance service of ensuring certain service levels on the roads under contract, and specific improvements (if so required by the bidding documents), all representing outputs or outcomes. A monthly lump-sum remuneration paid to the Contractor will cover all physical and non-physical maintenance services provided by the Contractor, except for unforeseen emergency works which are remunerated separately. Maintaining a road includes both routine and periodic tasks. Routine maintenance consists of many different tasks frequently necessary to maintain the function of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.).

7. During the contract period the contractor is responsible for environmental and social safeguards compliance as specified in the contractual agreements and necessary mitigation measures should be implemented to minimize any impacts resulted due to maintenance activities.

8. A total of 117.7 kilometers of Class A road will be upgraded under the succeeding Tranches iRoad Program. These national roads will follow road management contract (RMC) where the contractor will be responsible for ensuring that the road is in good riding condition for a period of 7 years including reconstruction and maintenance.

Table 1: Roads for RMC implementation under the iROAD project

RMC Pkg	Province	District	Rehabilitation and routine maintenance		
			Road ID	Road section	Length of road section (km)
1	Western	Gampaha	A001	Colombo – Kandy (From Nittambuwa to Warakapola)	16.0
	Sabaragamuwa	Kegalle	A001	Colombo – Kandy (From Warakapola to Mawanella)	43.1
	Sub Total				**59.1**
2	Central	Kandy	A001	Colombo – Kandy (From Mawanella to Kandy)	10.5
	Central	Kandy	A010	Katugastota – Kurunegala – Puttalum (From Katugastota to Galagedara)	16.3
	North Western	Kurunegala	A010	Katugastota – Kurunegala – Puttalum (From Galagedara to Kurunegala)	21.8
	Central	Kandy	B365	Peradeniya – Halloluwa – Katugastota* (From Peradeniya to Katugastota)	10.0
	Sub Total				**58.6**
Total					**117.7**

B. Objectives of the proposed project

9. The broad objective of this project is to improve the connectivity of road network in socio economic centres, cities, townships and villages of districts in four provinces selected. So that peoples living in the provinces will have a better convenient national road connectivity which may lead to the nationwide economic and social development.

10. Specific objectives of this project are to;

- improve, rehabilitate, and maintain 124.3kms of national roads to all-weather standard
- improve connectivity between production centres and market places and improve linkage with the other districts and provinces,
- facilitate mobility by improving inter- and intra-provincial road network
- open up rural areas for development,
- generate efficiency gains by lowering the unit cost of individual producers through transport efficiency which will lead to increase their margins and profits thus making them generating another round of investments,
- reduce rural poverty through improved access to markets and economic centres, social infrastructure, and new employment opportunities

11. To achieve these objectives, selected national roads connecting Colombo-Kandy, and Gampaha, Kegalle, and Kurunegalla districts will be improved, rehabilitated and maintained with the following guidelines:

- Improve, rehabilitate, and maintain the existing Class A national road to all weather standards with two lanes facility
- Surfacing the existing pavement with asphalt concrete (AC) if the present surface is weak
- Repair or reconstruct damaged culverts
- Introduce earth drains for all road sections and built up drains where necessary
- Remove any irregularities that are on the existing vertical profile,
- There by improve the vehicle operating speeds while ensuring safety of road users.

C. Objectives of the Initial Environmental Examination

12. This IEE covers propose improvement, rehabilitation and maintenance of 124.3km of national roads. The purpose of this Initial Environmental Examination (IEE) is to gather and provide:

(i) Information about the following existing environmental settings of the project influential area;
   - Physical Environment (including climate, air quality, topography, soil, surface and ground water hydrology),
   - Biological Environment (fauna and flora and presence of endemic, endangered species),
   - Social Environment (socio economic profile of the communities living in the project influence area, infrastructure facilities and land use etc.)

(ii) Identify beneficial and potential adverse impacts on the existing environment during preconstruction, construction and operational phases of the project;

(iii) Propose effective mitigation measures to avoid/ minimize the project induced adverse impacts while enhancing the beneficial impacts, and;

(iv) Formulate an effective Environmental Management Plan (EMP) which is common for all roads and will be road specified during bidding process, so as to sensitize and guide respective divisions of RDA in environmental and social safeguards compliance and sensitize and guide respective contractors in environmental and social safeguards compliance during construction stage.

D. Approach, Methodology and Personnel Involved

13. This IEE was carried out in compliance with the RDA manuals on environmental and social safeguards compliance in road development projects which is in line with national environmental and social safeguards acts/ policies and ADB safeguards policy statement, 2009.

14. Seven (7) environmental checklists[1] (EC) were prepared corresponding to each road section, to identify sensitive environmental features to be considered in the impact assessment. A core of impact zone set at 10 meters from both sides of the road edge was defined considering the RMC roads exist, proposed works are limited to maintenance related and confined to existing right of way. A secondary impact zone defines as 10 kilometers along the road centre line was selected in order to establish if the road section is encroaching inside protected areas including prescribed buffer zones. The EC summarizes the following details;

- Road details
- Location information
- Climatic conditions
- Generic description of Environment
- Specific description of the Road Environment
- Public Consultation
- List of photographs taken along the road

15. The assessment and report preparation was carried out by trained multidisciplinary team including Hydrologist, Environmentalist, Biologist/Ecologist, Acting Environment and Social Safeguards officer and Acting Social Impact Awareness officer of ESDD, RDA. This core team was supported by assistant staff members of environment and social dimensions. The support and guidance given by Director and Deputy Directors of ESDD, Project Director - RNIP and Project Director - IROAD of RDA is highly appreciated.

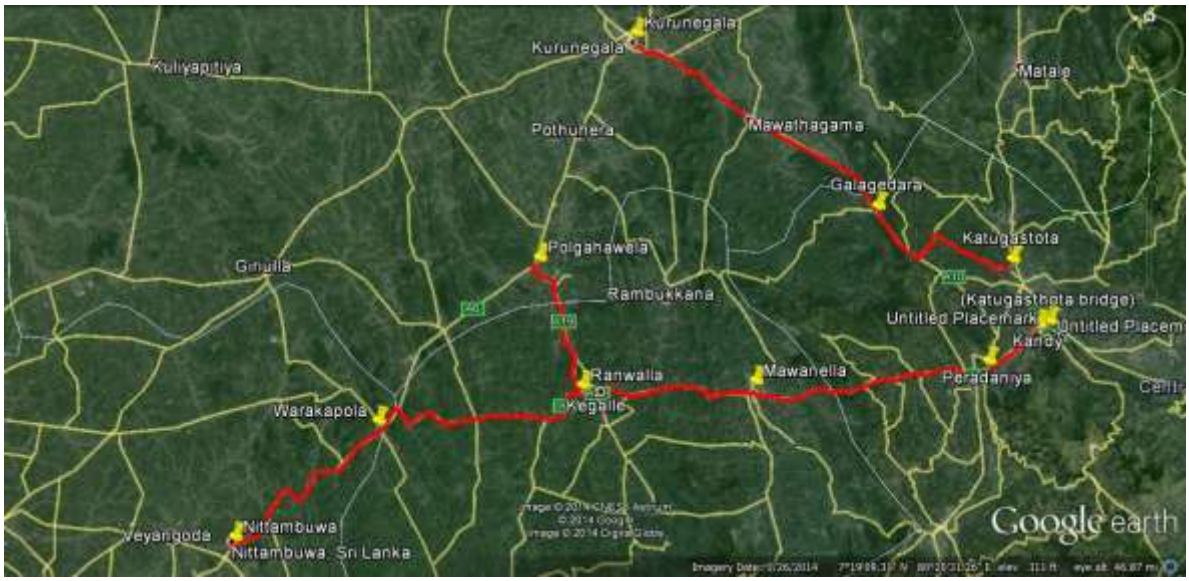


Figure 1: RMC Road Location Map

[1] Sample environmental checklist for Mawanella-Kandy is provided in the Annexure.

II. DESCRIPTION OF THE PROJECT

A. Location of the project

16. All candidate RMC road sections connect to villages, towns and cities of three districts of Kandy, Kegalle and Kurunegala located in Central, Sabaragamuwa, and North Western Provinces respectively. A total of 124.3kms of which 43.3kms are in Kandy, 21.8 kms in Kurunegala, and 16.0kms in Gampala, and 43.1 kms in Kegalle. The Class A national roads will be rehabilitated and maintained routinely to all weather standards under this project. The administrative divisions including Divisional Secretariat (DS) Divisions and Grama NIladari Divisions (Subordinate of the Divisional Secretary) falling within particular sections of roads are presented in Annex 1.1.

B. Need for the Project

17. The government's main objective-the next massive leaf forward- is to transform Sri Lanka into a strategically important economic centre of the world. Therefore, it is determined to transform Sri Lanka to be the Pearl of the Asian Silk Route once again, in modern terms and using strategic geographical location of the country effectively, Sri Lanka will be developed as a Naval, Aviation, Commercial, Energy and Knowledge Hub, serving as a key link between the East and West. Accordingly an accelerated development programs are undertaken by the Government of Sri Lanka (GOSL) in these trust areas by means of socio-economic and social infrastructure development. The Development Policy Framework of the government of Sri Lanka – The Emerging Wonder of Asia- identified major development priorities and projects in the said provinces to enhance the socio economic development of the area. However, to increase the effectiveness of the development, it should be assured that the benefits penetrate to the rural regions of the provinces as well as development potentials available in rural areas of the provinces should be exposed.

18. Most of the labour force in the project districts, roughly 47% of the total, is engaged in agriculture, and majority of them are restricted to rural areas (Department of Census and Statistics, 2012). It is necessary to improved road network connecting the biggest and next biggest cities of the country, namely Colombo and Kandy for cost effective transport of goods and enhance access to commercial and institutional services.

C. Analysis of Alternatives

1. No Project Alternative

19. The volume of traffic in the national roads connecting the four provinces under iRoad Tranche II is significantly increasing. These roads connect to industrial parks in Pallekele, Kandy, Nalada and Matale. The RMC roads provide easy access to the Central province's tourism and cultural enters including the world heritage sacred city of Kandy, Central highland (Horton plain), ancient city of Sigiriya, Golden Temple of Dambulla to which many foreign and local tourists are visited. According to the Tourism Development Strategy (2011 – 2016) of the Ministry of Economic Development, it introduced an accelerated development programmes for the tourism industry targeting each province of the country.

20. The RMC component of the Tranche II is three-pronged: the first prong is a section of A001 Colombo-Kandy which starts at Nittambuwa which passes to Warakapola, Mawanella, and ends at the outskirts of Kandy City; second is the section of A010 Katugastota-Kurunegala-

Puttalum starting at Katusgatota and traverses Galagedara, and Kurunegala; and the last prong is a section of A019 Polgahawela-Kegalle starting at Polgahawela to Ranwala Junction. These two roads connect three provinces and facilitate the surface transportation. Rehabilitation and improvement of these roads with maintenance ease the traffic and assure the safe of the pedestrians by means of constructing pavements etc. Further, the North western province is the second largest provincial economy of the country with provincial GDP at Rs. 495 billion. This provincial economy mainly consists from coconut plantations, paddy, tourism and fisheries. One of the key national and provincial initiatives, identified was the expansion of national and provisional road network to establish intra provisional connectivity and make easy economic integration with the rest of neighbouring townships in the Western, northern, North Central, Central and Sabaragamuwa provinces. Without improving the Class A national roads that provide the vital links to the three provinces, the planned development projects will be constrained.

21. However, the RMC road needs to be rehabilitated and maintained. These roads currently from inadequate and silted drainage system, several sections have rutted surface requiring rehabilitation to the base layer. The increasing traffic causes long traffic queue and requires improvement s in traffic management and road safety appurtenances like sign boards, crash barriers, and rumble strips. Finally low-lying sections require increase in embankment height to ensure continuous flow of traffic during peak monsoon.

22. The length of the road section, existing widths of the roads, number of bridges, culverts and causeways present, existing surface type and the category of the road condition of each selected roads are presented in Annex 1.1.

2. With Project Alternative

23. With the project environmental impacts related to flooding will be avoided. The most significant is the reduction in greenhouse gas emission intensity due to improvements in road surface, road shoulders, and traffic management will avoid congestion and decrease fuel consumption. Finally, community and road safety will be enhanced through the installation of safety appurtenance that will reduce the number and severity of road crashes.

D. Magnitude of Operations

1. Project Activities

24. The scope of work proposed for the OPCR roads include the following: clearing and grubbing; removal of existing structure; road excavation; channel excavation; excavation and backfill of structures; embankment construction; sub bases, capping layers, and bases; shoulder construction, asphalt overlay; roadside and lead away drains; cleaning, desilting, and repairing of culverts. All improvements are limited to the ROW and no land acquisition is necessary.

25. The proposed pavement is asphalt concrete (AC)with the following criteria:

- If the existing surface is asphalt; it will be overlaid by the asphalt concrete.
- Base correction will be carried out if base failures are found along the road.
- The build up drain has been provided for town areas or other requested areas. Otherwise the earth drain will be provided.
- The earth work will be carried out in required areas.
- Finally road marking will be carried out.

26. Proposed typical cross sections are attached in Annex 2.2. In addition, improvement to cross and side drainage will be considered in locations where structures have been badly damaged or rectification of the drainage is significantly required. No buildings or temporary structures will be fully or partially affected. The following specific design standards will government the components of the RMC project:

27. The Project consists of A-Class and B-Class roads and the applicable design standards and guidelines are:

(i) Road Design Manual and Bridge Design Manual—RDA's standard; (b) AASHTO—Geometric Design of Highways and Streets 5th edition (2004); (c) TRL—Overseas Road Note 6, A Guide to Geometric Design (1988), and (d) Austroads—Rural Road Design (2003).Bridges: RDA's Sri Lanka Bridge Design Manual of 1997, based on the British Standards Code of Practice for Bridge Design (BS5400:1990).Road Pavement: (a) Transport Research Laboratory's Road Note 31, 4th Edition (TRL-RN31), basis of RDA's pavement design process; (b) AASHTO Pavement Design Guide, and (c) design life for new pavements: 10-year life with provision for overlays during or at the end of that period to extend the life to 15–20 years. Drainage: RDA's standards incorporating relevant standards from AASHTO and the British Standard Design Manual for Roads and Bridges.

- **Cross Section**. Road cross sections vary depending on projected traffic volume, geometric condition, and terrain. Typically, the cross section consists of carriageway 4.5–6.5 meters (m), soft and hard shoulder 1.0–1.5 m each side, with drainage and berm as required. Sidewalks (typically 1.2 m wide) for bridges are considered on a case-by-case basis, depending on bridge length, location, and pedestrian and traffic volume. Use of the existing road corridor (existing road cross section and provision for utilities) is maximized to achieve the optimal combination of economy and desired road improvement without land acquisition.
- **Alignment and Traffic Facilities.** In general, the proposed improvements follow the existing horizontal and vertical alignment. The only minor changes are applied to the horizontal alignment for very short sections to enhance road safety, to ease the radius of curves, or minimize blind spots. The road safety aspects relate mostly to localized sections of the road alignments. In densely populated areas, roads, bridges, and associated sidewalks are made accessible for all, including the disabled.
- **Road Safety.** The road safety aspects are related mostly to localized sections of the alignments. Based on the road safety inspections, carried out on all roads during the field evaluation, the detailed design, wherever possible, incorporates improvements to road width and alignment, including installing precautionary speed signs to slow down for oncoming curves or low speed areas.
- **Road Side Drains.** To minimize storm water flooding or ponding, roadside drains are reconstructed to direct surface flows away from road pavements and divert to streams or watercourses. Built up drains are provided for urban and sub-urban areas and for rural areas, earth drains are provided. For existing built up drains, which can be retained with

minor repairs (retained or repaired), the waterways are restored by removing sediment materials and debris.

- **Culverts and Bridges.** Improvements comprise repairing and or replacing existing culverts and bridge structures, depending on hydraulic and structural requirements. These interventions include structural renovation of substructure and superstructure elements together with installation or repair of guardrails and improvement of causeways and vented drifts. Depending on the terrain and outcome of hydrological studies, few new culverts are introduced to improve drainage. Materials and construction methods are in accordance with Technical Specifications, Part 1 Standard Specification for Construction and Maintenance of Roads and Bridges 1989 (Sri Lanka), modified to suit project requirements.
- **Earth Retaining Structures.** When the road is in embankment and any widening of road involves the land acquisition, retaining walls are introduced to get required additional road widths. Gabions, random rubble masonry and reinforced concrete retaining walls are used and Materials and construction methods are in accordance with Technical Specifications, Part 1 Standard Specification for Construction and Maintenance of Roads and Bridges 1989 (Sri Lanka), modified to suit project requirements.
- **Road Pavement.** Road pavements are constructed in accordance with Technical Specifications, Part 1 Standard Specification for Construction and Maintenance of Roads and Bridges 1989 (Sri Lanka). Road pavement consists of granular soil sub base, aggregate base course and Asphalt concrete wearing course.

28. RMC will cover the periodic, routine, and emergency maintenance of the roads. Periodic maintenance works is consist of specific types of major interventions designed to ensure the residual pavement and surfacing lives are provided to RDA by the contractor at the end of the contract period. Routine maintenance services are all interventions on the roads which are to be carried out by the contractor in order to achieve maintain the road performance standards defined by the service levels included in these specifications and all activities related to the management and auditing of the road contract performance measures. Emergency works are activities needed to reinstate the roads and reconstruct their structure or their ROW which has been damaged as a result of natural phenomena such as strong storms, floods and earthquakes.

2. Extraction of Construction Material

29. Material required for construction will be explored from the project area. Existing sites which are operating with relevant licenses and approvals will be used especially for extraction of metal and sand. Offshore sand could also be used for construction subjected to confirmation of quality. If new material extraction sites will be opened for this project, necessary licenses and approvals will be obtained from relevant agencies. As per the bidding documents prepared for iRoad Program, estimated approximate quantities of material required for each road are provided below:

Table 2.1: Material Requirement for Each Package, RMC

Road Section	Section Name	Aggregate (m^3)	Sand (m^3)	Sub base (m^3)	Asphalt (t)
A001	Colombo – Kandy (From Nittambuwa to Warakapola	10,608.4	367.4	481.8	67,637.9
A001	Colombo – Kandy (From Warakapola to Mawanella)	28,649.5	992.2	1,302.4	182,669.3
A001	Colombo – Kandy (From Mawanella to Kandy)	11,292.6	391.6	513.7	71,998.3
A010	Katugastota – Kurunegala – Puttalum (From Katugastota to Galagedara)	10,827.3	353.1	491.7	69,203.2
A010	Katugastota – Kurunegala – Puttalum (From Galagedara to Kurunegala)	14,467.2	501.6	657.8	92,241.6
B365	Peradeniya – Halloluwa – Katugastota* (From Peradeniya to Katugastota)	6,631.9	229.9	298.1	42,289.5

Source: iRoad Program, RDA

III. POLICY AND LEGAL FRAMEWORK

A. Legal Framework

1. National Environmental Act and other applicable regulation

30. The National Environment Act (NEA) No. 47 is the key environmental policy framework which is administered through the Central Environment Authority (CEA) of the Ministry of Environment and Renewable Energy (ME&RE). NEA No. 47 was enacted in 1980 and NEA amendment Act No. 56 of 1988 stipulated the regulations for assessing and managing environmental impacts and obtaining the environmental clearance in a timely and systematic manner. It also provides guidelines for environment management, management of natural resources, fisheries, wild life, forestry, soil conservation, environment quality, environment protection and approval of projects. The environmental clearance process is implemented through the designated Project Approving Agency (PAA) as prescribed by the Minister under section 23 Y of the NEA. The procedure that should be followed for obtaining environmental clearance is described under section 23CC and 32 of the NEA.

31. The environmental clearance process should be initiated by submitting the completed Basic Information Questionnaire (BIQ) to CEA with preliminary information about the project including exact locations of the project components, extent and environmental sensitivity related to project activities. Based on this CEA decides whether the project is a "Prescribed Project"[2]or not and who the PAA will be for administering the IEE or EIA process to obtain environmental clearance if the proposed project is a prescribed project. For Prescribed project CEA or the designated PAA will issue a TOR for the IEE or EIA required.

32. The scope of the investment program includes rehabilitation and upgrading of existing rural and national roads with no widening. According to the Gazette Extra-ordinary No. 772/22 of 24th June 1993 and subsequent amendments all rehabilitation works for existing highways and roads do not fall within the category of Prescribed Projects. Hence, it is likely that the project roads under the investment program will not be required to prepare an IEE or EIA for securing an environmental clearance. However, further amendments to the NEA on requirements for material extraction, emissions, noise and vibration levels that are relevant for the project will need to be followed. Necessary revisions will need to be made within the project to meet the new requirements if there are any.

33. If a project road falls adjacent to the boundary or inside a protected area, necessary clearance will need to be sought from the Department of Wildlife Conservation (DWC) even if there will be no widening of the road ROW. Depending on the sensitivity of the protected area, the DWC may require conduction of an IEE or EIA study for the respective road. No works are allowed in project roads falling inside Strict Nature Reserves.

34. While the NEA is the key environmental legislation under GOSL there are a number of other environmental laws and regulations that are applicable to the investment program as given in Table 3.1 below.

[2]Under the NEA, a prescribed project means that the project requires a full Initial Environmental Examination or Environmental Impact Assessment (EIA) study depending on the TOR issued by CEA for securing the environmental clearance

Table 2: Applicable National Laws and Regulations for the Investment Program

Legislation	Relevance and main content	Authorizing Institution
Coast Conservation Act No 57 of 1981	This act regulates any un authorized construction within the coastal zone, by making it mandatory to obtain permits for any Development activity falling within the coastal zone.	Coast Conservation and Coastal Resources Management Department
National environmental protection and quality regulations under Extraordinary gazette notification No. 1534/18 and No. 1533/16 of 2008 under NEA section 32 & 23A, 23B	This regulates the discharge and deposit of any kind of waste or emission into the environment and stipulates requirements for an Environmental Protection License (EPL) depending on the project activity. Examples of activities requiring and EPL are: asphalt processing plant, concrete batching plants, treatment plants, sewerage networks, mechanized mining activities etc.	CEA
National Environmental (Protection and Quality) Regulation No. 1 of 1990 published in Gazette Extraordinary No. 595/16 of February, 1990	Provides standards for discharging effluents into inland surface water during proposed project activities.	CEA
National Environmental (Ambient Air Quality) Regulations, 1994, published in Gazette Extraordinary, No. 850/4 of December, 1994 and amendment gazette No. 1562/22 of 2008	Provides standards for emissions to the air during proposed project activities.	CEA
National Environmental (Noise Control) Regulations No.1 of 1996 and its amendments	Regulates maximum allowable noise levels for construction activities during proposed project activities	CEA
National Environmental (Vehicle Horns) Regulations, No. 1 of 2011	Regulates maximum allowable noise emanating from vehicular horns on a highway or road any motor vehicle use during project construction activities	CEA
National Environmental (Municipal Solid Waste) Regulations, No. 1 of 2009	Regulates dumping municipal solid waste along sides of any national highway or at any place other than places designated for such purpose by the relevant local authority during proposed project activities	CEA
Fauna and Flora Protection Act (FFPO) No.2 of 1937 amended	The act specifies that any development activity taking place within one mile from the boundary of a National Reserve	Department of Wildlife Conservation

Legislation	Relevance and main content	Authorizing Institution
in 1993 and 2009	declared under the Ordinance requires an EIA/IEE which provide for the protection and conservation of fauna and flora of Sri Lanka and their habitats; for the prevention of commercial and other misuse of such fauna and flora and their habitats for conservation of biodiversity of Sri Lanka; and to provide for matters connected there with.	
Forest Act No. 34 of 1951	This act is to consolidate and amend the law relating to the conservation , protection and management of forest and forest resources for the control of felling and transport of timber and Forest and for matters connected therewith or incidental thereto.	Department of Forest
Felling of Trees Control Act No. 9 of 1951 as amended through Act No. 30 of 1953	This Act sought to prohibit and control felling of specified trees (mainly intended to stop indiscriminate felling of specified trees) in the country.	Department of Forest Conservation
Water Resources Board Act, No. 29 of 1964 and (Amendment) Act, No. 42 of 1999	The act controls and regulates developments (including conservation and utilization) of water resources; prevention of pollution of rivers, streams and other water resources; formulation of national policies relating to control and use of water resources.	Ministry of Irrigation and Water Resources Management
Soil Conservation Act, No. 25 of 1951 and Amended No. 24 of 1996	This Act makes provisions for the enhancement of productive capacity of soil; to restore degraded land for the prevention and mitigation of soil erosion; for the conservation of soil resources and protection of land against damage by floods, salinity, alkalinity, water logging; and to provide for matters connected therewith or incidental thereto	Department of Agriculture
Explosives Act No. 36 of 1976	To provide control of explosions and regulations of matters connected with explosive activities related with the project.	Ministry of Defense
Municipal Councils Ordinance No. 29 of 1947, the Urban Councils Ordinance No. 61 of 1939 and the Pradeshiya Sabha Act No. 15 of 1987 as amended in 2010	Regulates and control actions pertaining to socioeconomic development such as roads, culverts, bridges, ferries, waterways and other means of local transport and related site clearance for constructing worker camps, site offices etc. and methods taking place within the command area relevant to government	Ministry Of Local Government And Provincial Council

Legislation	Relevance and main content	Authorizing Institution
	laws and regulations	
Flood Protection Ordinance No. 04 of 1924, No 22 of 1955	An ordinance for protection of areas subjected to damage from floods. This includes declaration of flood areas, preparation of schemes for flood protection and other rules and regulations regarding flood in the country	Irrigation Department
Crown Land Ordinance Act No. 1947	An ordinance to make provision for the grant and disposition of crown lands in Sri Lanka; for the management and control of such lands and the foreshore; for the regulation of the use of the water of lakes and public streams; and for other matters incidental to or connected with the matters related to proposed project	Land Commissioners Department
Agrarian Development Act No. 46 of 2000 (Section 32)	This act regulates using paddy land for a purpose other than agricultural cultivation without the written permission of the Commissioner General.	Agrarian Services Department
Land development statuette No. 7 of 2002 the western province provincial council, amendment No. 1287/26 of 2003	A statute for regularizing utilization of state lands situated within the western province either by state or the provincial council, for regulating the distributing of the aforesaid lands and lands in possession of the provincial council, for augmenting productivity of lands and for matters connected with or incidental to them this statute is in compliance with the crown lands ordinance no. 08 of 1947 (chapter 454) and the land development ordinance no.19 of 1935 chapter 464 as amended by land development (amendment) acts, no. 16of 1969 no.27 of 1981,no 22 of1998,no, 22 of 1995 1996. Of divesting of state lands, no. 07 of 1979	Governor _ Western Province Provincial Council And Land Commissioners Department
Sri Lanka Land Reclamation and Development Corporation Act 15 of 1968 as amended by Act No 52 of 1982	This act established Sri Lanka Land Reclamation and Development Corporation which grants permission for the public to fill marshy land subject to provision of storm water drainage.	Sri Lanka Land Reclamation and Development Corporation
National Thoroughfares Act, No. 40 of 2008	This act is known as RDA act which provide for planning, design construction, development, maintenance and administration an integrated public road network in Sri Lanka.	Road Development Authority

Legislation	Relevance and main content	Authorizing Institution
Urban Development Authority (UDA) Law No 41 of 1978 and Urban Development Projects (Special Provisions) Act No 2 of 1980	This law provides for the establishment of an UDA to promote integrated planning and implementation of economic, social and physical development of certain areas as may be declared by the minister to be urban development areas and for matters connected with the relevant project activities. Urban Development Projects (Special Provisions) Act No 2 of 1980 is an act to provide for the declaration of lands urgently required for carrying out urban development projects and to provide for matters connected there with relevant project activities.	Urban Development Authority (UDA) under the ministry of Urban Development and Defence
Town and country planning ordinance No. 13 of 1946 and The Town & Country Planning (Amendment) Act, No. 49 of 2000	This regulates the National Physical Plan with transport as the main component	National Physical Planning Department (NPPD) under the Ministry of Urban Development and Defence
Buddhist Temporalities Ordinance No. 19 of 1931	This act provides necessary assistance to administer and protect the property of Viharas, interventions to settle disputes regarding property of Viharas and makes recommendations to release money to be paid as compensation in respect of property of Viharas acquired by government for any development project	Department of Buddhist Affairs
Cemeteries and burial grounds ordinance No. 9 of 1899 and amendments	The act regulates any disturbance, removal of burial, monuments and use of such areas for development project	Local Government Authority
Antiquities Ordinance No. 9 of 1940 and amendments	The act regulate activities of projects located in close proximity of any archaeological reserves	Department of Archaeology

35. Under the NEA (No). 47 and some of the laws and regulations listed in Table 3.1 above, there are specific requirements for clearances, permits and licenses required for road projects as listed in Table 3.2 below.

Table 3.2: Applicable Approvals required for the Investment Program

Project stage	Approvals	Project Related Activity	Relevant Agency
Pre-Construction Stage Note: Although clearances and approval should be obtained during preconstruction stage it is valid throughout the project cycle. However this should be renewed before expiry date	Environment clearance	Implementation of the project	Central Environment Authority
	Clearance from Coast Conservation and coastal resources management department	Development activities in coastal areas	Coast Conservation and coastal resources management department
	Industrial Mining License (IML)	Operation of quarries, borrow areas and other material extraction sites	Geological Survey and Mines Bureau
	Environmental Protection License (EPL)	Operation of material extraction site including operation of asphalt plants, treatment plants etc.	CEA
	Local Government Authority Trade license and machinery permits	Deciding waste disposal sites, material storage and sites for worker camps and other project stations Trade license should be obtained for asphalt plants, batching plants, quarries etc.	Respective Provincial Council, Local authorities and respective Pradeshiya Sabha
	Explosive Permits	Blasting activities	Ministry of Defence
	Approval for removal of trees	Road clearance for construction	Forest department, CEA and local authorities
	Disturbance to Paddy Lands	Ground preparation for ROW and side drains	Commissioner of Agrarian Services
Construction stage	Consent from relevant government agencies	Construction of bridges, culverts and other drainage systems, land filling, dredging activities	Department of Irrigation, Department of Agrarian services, Local government authority, Land Reclamation and Development Cooperation
	Approval from relevant state /local agencies for the removal/ temporary disturbances for existing utilities	Surfacing, construction of bridges and side drains, embankment filling works	NWSDB for water lines, Ceylon electricity Board for Electric cable/poles, Sri Lanka Telecom for land line telephone cables, poles, Pradeshiyasabha, other local authorities for drainage, sewer systems etc.

2. Environmental Protection License (EPL)

36. The Environmental Protection License (EPL) is a regulatory/legal tool under the provisions of the National Environmental Act No: 47 of 1980 amended by Acts No 56 of 1988 and No 53 of 2000. Industries and activities which required an EPL are listed in Gazette Notification No 1533/16 dated 25.01.2008. Industries are classified under 3 lists i.e. List and "C" depending on their pollution potential.

37. Part "A" comprises of 80 significantly high polluting industrial activities and Part "B" comprises of 33 numbers of medium level polluting activities. EPL for industries in lists "A" and “B” have to be obtained from the relevant Provincial Offices or District Offices of the CEA.

38. Part "C" comprises of 25 low polluting industrial activities which have been delegated to Local Government Authorities, namely Municipal Councils, Urban Councils and Pradeshiya Sabhas. EPL for the industries in List "C" has to be obtained from the respective Local Authorities. The Local Authorities carry out issuing of EPLs and related functions such as follow up, monitoring and law enforcement.

39. Objectives of the EPL

- To prevent or minimize the release of discharges and emissions into the environment from prescribed (industrial) activities in compliance with national discharge and emission standards.
- To develop an approach to pollution control that considers discharges from prescribed (industrial) processes to all media (air, water, land) in the context of the effect on the environment.
- To contain the burden on industry, in particular by providing guidance on pollution control for polluting processes.
- To ensure that the system responds flexibly both to changing pollution abatement technology and to new knowledge such as cleaner production, waste minimization etc

3. International Agreements and Conventions

40. Sri Lanka is also a signatory to a number international agreements and conventions related to environmental conservation. Those that are relevant for this investment program are provided below:

- Conventions on Wetlands of International Importance Especially as Water Fowl habitats (Ramsar)
- Convention concerning the protection of the World Cultural and Natural Heritage
- Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES)
- Convention on the conservation of Migratory Species of Wild Animals (CMS 1979)
- United Nations Framework Convention on Climate Change
- Convention on Biological Diversity
- Plant Protection Agreement for Asia and the Pacific region

B. Policy Framework

1. ADB Safeguards Policy Statement, June 2009

41. ADB's safeguard policy framework consists of three operational policies on the environment, Indigenous People, and involuntary resettlement. All three safeguard policies involve a structured process of impact assessment, planning, and mitigation to address the adverse effects of projects throughout the project cycle. The safeguard policies require that (i) impacts are identified and assessed early in the project cycle; (ii) plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and (iii) affected people are informed and consulted during project preparation and implementation. The policies apply to all ADB-financed projects, including private sector operations, and to all project components.

42. The objective of environment safeguards policy is to ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process.

43. Proposed projects are screened according to type, location, scale, and sensitivity and the magnitude of their potential environmental impacts, including direct, indirect, induced, and cumulative impacts.

44. Projects are classified into the following four categories:

- **Category A.** A proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment (EIA), including an environmental management plan (EMP), is required.
- **Category B.** The proposed project's potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE), including an EMP, is required.
- **Category C.** A proposed project is likely to have minimal or no adverse environmental impacts. An EIA or IEE is not required, although environmental implications need to be reviewed.
- **Category FI.** A proposed project involves the investment of ADB funds to or through a financial intermediary. The financial intermediary must apply and maintain an environmental and social management system, unless all of the financial intermediary's business activities have minimal or no environmental impacts or risks.

45. **Policy Principles.** Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.

46. Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.

47. Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.

48. Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.

49. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.

50. Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.

Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.

51. Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

52. Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.

53. Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.

54. Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of “chance find” procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

IV. DESCRIPTION OF EXISTING ENVIRONMENT

A. Physical Environment

1. Climate, land use, terrain and soil

55. Based on major climatic zones of the country, candidate road sections of Kandy district fall in to mid country - wet zone, in Kurunegala district are located within low country - intermediate zone, Gampaha District roads are in to low country wet zones and Kegalle roads are located within low country – wet zone and mid country – wet zone.

56. The climatic environment of the project area is further categorized in to agro – ecological zones which are categorized based on climate, soil, natural vegetation and land use pattern of an area. The specific agro-ecological zones (AEZ) related to candidate road sections and their characteristics are presented in the succeeding Table. The AEZ nomenclature is alphanumeric where the first upper case letter denotes the climatic condition (W-wet, I-intermediate, D-dry), the second upper case letter indicates elevation (L-low, M-medium, U-upper), the first number describes the moisture regime, and the last lower case letter indicates the rainfall distribution and other environmental factors where the degree of wetness degrades from letters a to f. All RMC roads, except for a short section in Kurunegala are located on areas that have wet condition experiencing rainfall most of the time.

Table 3: Climatic characteristics of candidate roads[3]

District	Agro-ecological Zone	Roads (ID) falls in to agro-ecological zone	75% expectancy value of rainfall (mm)	Description (Land use, Terrain, Soil groups)
Kandy	WM3a	RMC: A001	>1600	Mixed home garden, Export agriculture crop, tea, paddy, rubber. Steepy, hilly and rolling RBL, IBL, LHG, Lithosol
	WM3b	RMC: A001	>1400	Mixed home garden, Export agricultural crops, tea, vegetables, Paddy. Hilly, rolling, undulating and steep RBL,IBL and LHG
	WM2b	RMC: B365	>1800	Mixed home garden, Paddy, Export agricultural crops and tea. Steep, hilly and rolling.RBL,IBL and RYP soils
Gampaha	WL3	RMC: A001	>1700	Coconut, Fruit crops, Mixed home garden, Paddy. Rolling and Undulating terrain.RYP with soft and hard laterite.LHG and Regosols

[3] RBE – Reddish Brown Earth, LHG – Low Humic Gley, NCB – Non Calcic Brown Soil, RYP – Red Yello Podzolic, and IBL – Immature Brown Soil

District	Agro-ecological Zone	Roads (ID) falls in to agro-ecological zone	75% expectancy value of rainfall (mm)	Description (Land use, Terrain, Soil groups)
	WL2b	RMC: A001	>2200	Rubber, Coconut, mixed home garden, Paddy. Steepy dissected rolling and undulating.RYP,RYP with strong mottled sub soil, RBL and LHG
Kegalle	WL2b	RMC: A019	>2200	Rubber, Coconut, mixed home garden, Paddy. Steepy dissected rolling and undulating.RYP,RYP with strong mottled sub soil, RBL and LHG
	WM3a	RMC: A001	>1600	Mixed home garden, Export agriculture crop, tea, paddy, rubber. Steepy, hilly and rolling RBL,IBL, LHG, Lithosol
Kurunegala	IL1a	RMC: A010	>1400	Coconut, mixed home garden, Export agricultural crops, Paddy, Rubber. Rolling, undulating and flat. RYP soils with strongly mottled sub soil, RYP, LHG, RBL, Regosols.
	WM3b	RMC: A010	>1400	Mixed home garden, Export agricultural crops, tea, vegetables, Paddy. Hilly, rolling, undulating and steep RBL,IBL and LHG
	WL2b	RMC: A019	>2200	Rubber, Coconut, mixed home garden, Paddy. Steepy , dissected rolling and undulating. RYP,RYP with strong mottled sub soil, RBL and LHG

LHG - Low Humic Gley, RYP - Red Yellow Podsolic, RBL - Reddish Brown Latosolic, RBE - Reddish Brown Earth, IBL- Immature Brown Loam, RBL – Rich Brown Latasol

57. Rich agricultural soils abound in the project area. Rich Brown Latasol (RBL) are found in in all project districts and rich Immature Brown Loam (IBL) suitable for rice farming are mostly found at all elevations in Kandy, and mid-elevation in Kegalle and Kurunegala.

58. Rainfall distribution is influenced by monsoon winds from the Indian Ocean and the Bay of Bengal. The monsoon winds create two distinctive rainy seasons, namely southwest and northeast, and two inter-monsoons rains experienced from March to April and October to November. Kandy District of the Central Province and Gampaha District of the Western Province receive sufficient rainfall from the southwest monsoon from May to September and

relatively low rainfall from northeast monsoon from December to February and relatively dry from end of January to early March. Kurunegala and Kegalle receive fairly good rainfall from both monsoons.

2. Hydrology

59. The RMC road is traverse by several major rivers in the country. The Mahawli River in Kandy District, longest river (335km) in Sri Lanka originating from Adams Peak of the central hills with a drainage area of 10,327sq.km. carrying7,300 MCM of water annually intersects A001 section and runs adjacent to B365. The two rivers in DaduruOya and Maha Oya cross and runs adjacent to A010 section. Finally, the Dee ella Oya, a small stream crosses the road section of Nittambuwa to Warakapola at Pasyala.

Table 4: Road sections crosses or located near water bodies

No.	Road ID	Road section	Water Body
1	A001	Mawanella - Kandy	Crosses Mahaweli river
2	A010	Katugastota - Galagedara	----------
3	B365	Peradeniya – Halloluwa- Katugastota	Runs adjacent to Mahaweli river
4	A010	Galagedara- Kurunegala	--------
6	A001	Nittambuwa- Warakapola	Crosses Dee ellaOya (Stream)

3. Air Quality and Noise

60. The RMC roads pass through heavily built-up areas with heavy traffic and congestions particularly in the cities and townships and air quality is expected to be below standards. No baseline air quality was taken along RMC roads but several studies supports a deteriorating air condition along high capacity roads suffering from congestion. Nandesena et.al[4] revealed in Colombo Fort the annual average PM10 concentration from 1998-2007 consistently hovers around 80 ug/NCM which is higher than the national ambient standard of 50ug/NCM and WHO standard of <20 ug/NCM while SO2 ambient concentration has not exceed the 80ug/NCM set by USEPA but is steadily increasing. The same study has identified motor vehicles as the single biggest contributor to air pollution. A study in Kandy City by Premasiri et.al.[5](2011) revealed a better air quality condition from 28 monitoring stations tracking SO2, NO2, and PM10 level concluded with the exception of the 2 bus stands the air quality is good.

61. An extract from the National Environmental (Ambient Air Quality) Regulations, declared in 1994 is presented in Table 5.

Table 5: National ambient air quality standards

Parameter	Averaging time (hrs)	NAAQS (mg m^{-3})	NAAQS (ppm)
Carbon Monoxide	8	10	9
Nitrogen Dioxide	24	0.10	0.05
	8	0.15	0.08
Sulphur Dioxide	24	0.08	0.03
Lead	24	0.002	-

[4] Y. Nandesanae.t. (2007). Air pollution and health in Sri Lanka: a review of epidemiologic studies. MC Public Health 2010,10:300http://www.biomedcentral.com/1471-2458/10/30

[5]H. Premasiri et.al (2011). Population exposure risk assessment to air pollution in Kandy city area. Environmental Division, National Building Research Organisation, 99/1, Jawatta Road, Colombo 05.

Parameter	Averaging time (hrs)	NAAQS (mg m^{-3})	NAAQS (ppm)
TSP	24	0.03	-
PM10	8	0.35	-

Source: Gazette of the Democratic Socialist Republic of Sri Lanka, 850/4 (20 December, 1994)
PM 10 – particulate matter < 10 µm
NAAQS – National Ambient Air Quality Standards (NAAQS)

62. Vehicle Emission Test (VET) became mandatory with effect from 15th July 2008 in order to conform to the environmental standards on vehicle emission as per the Motor Traffic Act (Emission control) Regulation of 1994, 817/6, Part I, Section I. This move is a part of the efforts to improve the air quality in the island. And this regulation is applicable for all construction vehicles as well.

63. According to Schedules I and II of National environmental (Noise Control) regulations No.1 1996 (924/12), the study area belongs to "Low noise area". Therefore the ambient noise level of the area can be considered as 55 dB (A) during day time (06.00 hrs-18.00 hrs) and 45 dB (A) night time (18.00 hrs - 06.00 hrs).

4. Occurrence of Natural Disasters in the Project Area

64. Excessive rainfall, landform and geology, unsustainable land use practices, deforestation, collectively contribute to create landslide hazards particularly during the monsoon rains in the mountainous slopes of the central and south western regions of the country. Districts such as Kegalle and Kandy are the major landslide prone areas in the hill country of Sri Lanka. It was reported that, National Building Research Organisation (NBRO) had been issuing landslide warnings regularly districts during the monsoon rainy seasons as a measure of the disaster management strategy. Major landslides have occurred in January 1986, May-June 1989, October 1998 and May 2003 in the several regions in the above mentioned districts of the country.

B. Ecological Environment

1. Existing Habitats with Respect to Flora and Fauna and protected areas

65. Different types of habitants either manmade habitats i.e., home gardens, paddy fields, plantations of rubber, coconut and some natural habitats i.e., streams, scrubland could be observed adjacent to the project area. There is a possibility that the project may have an impact on natural habitats within the project area. Any forests/wildlife reserves/ sanctuaries located within 100m along roads located in Kandy, Kurunegala, Gampaha, and Kegalle districts were not observed.

C. Socio - Economic Environment

1. Demographic Characteristics

66. **Population and population density.** Total population in the project districts as of 2012 was estimated at 6.5million. In the project districts, female outnumber the male accounting for 54.8% of the total population. In Kandy district that registered the highest female to male ratio, as of 2012 of the 1,369,899 total population, 720,109 are female. Gampaha district registered the least at 51.4% of the population are female. In terms of population density, Gampaha

district is the most dense at 1,714 persons/km2, in contrast Kurunegala is the least populated at 338 persons/km2.

Table 6: Population by gender

District	Population				Total population	Population density (person/km^2)
	Male	%	Female	%		
Kandy	649,790	47.4	720,109	52.6	1,369,899	715
Kurunegala	775,061	48.1	835,238	51.9	1,610,299	338
Gampaha	1,115,349	48.6	1,179,292	51.4	2,294,641	1714
Kegalle	400,083	47.7	836,603	52.2	1,236,686	497
Total	**2,940,283**	**45.2**	**3,571,242.**	**54.8**	**6,511,525**	

Source: Department of Census and Statistics, 2012

67. **Population by ethnicity**. By ethinicity, majority of the population in the project area are Sinhalese followed by Muslim, Sri Lankan Tamils, and Indian Tamils accounting for 99.7% of the total and individually brings 86.5%, 7.5%, 3.1%, and 2,3%, respectively. Gampaha has the most number of Sinhalese with 2,079,115 while Kandy has the largest Muslim population with 191.159. Sri Lankan and Indian Tamils are mostly found in Gampaha and Kandy with 80,071 and 83,234, respectively.

Table 7: Distribution of population by the ethnicity

Ethnic Group	Sri Lanka	%	Kandy	%	Kurunegala	%	Gampaha	%	Kegalle	%
Sinhala	15,173,820	74.9	1,018,323	74.3	1,471,339	91.4	2,079,115	90.6	715,723	85.6
Sri Lankan Tamil	2,270,924	11.2	71,640	5.2	18,763	1.2	80,071	3.5	20,250	2.4
Indian Tamil	842,323	4.2	83,234	6.1	3,582	0.2	10,879	0.5	41,468	5.0
Muslim	1,869,820	9.2	191,159	14.0	113,560	7.1	95,501	4.2	57,952	6.9
Burger	37,061	0.2	2,201	0.2	711	0.0	9,898	0.4	577	0.1
Sri Lankan Chetti	6,075	0.0	115	0.0	92	0.0	4,093	0.2	37	0.0
Malay	40,189	0.2	2,062	0.2	1,083	0.1	11,658	0.5	168	0.0
Baratha	1,688	0.0	23	0.0	28	0.0	552	0.0	4	0.0
Other	21,823	0.1	1.142	0.1	1,141	0.1	2,874	0.1	424	0.1
Total Number Of Persons	**20,263,723**	**100.0**	**1,369,899**	**100.0**	**1,610,299**	**100.0**	**2,294,641**	**100.0**	**836603**	**100.0**

Source: Department of Census and Statistics, 2012

68. **Population by sector.** The succeeding Table shows the distribution of population by sectors. By far, the majority of population are living in rural areas, and about 10% lives in urban area.

Table 8: Distribution of population by sector

District	Urban Population (%)	Rural Population (%)	Estate Population (%)
Kandy	12.2	80.5	7.3
Kurunegala	2.4	97.2	0.5
Gampaha	14.6	85.4	0.0
Kegalle	2.2	90.8	7.1

Source: Department of Census and statistics, 2001.

2. Main economic activities

69. Based on the labour force survey 2012, following Table presents the labour force involvement in main three sectors: agriculture, industry, and services. The services sector is the main employer in the project princes and the nation as a whole accounting for 46.1%, and 66.4%, respectively. At the Provincial level, Gampaha has the most number of its population employed in the service sector at 52.5% while the least is Kurunegala with 36.6%. Industrial employment is largest in Gampaha at 40.8% while the least is Kandy at 27%. As expected, Gampaha has the least number of its population employed in the agricultural sector with only 6.7 while Kurunegala is the largest at 32.6%.

Table 9: Employment by major industry group - 2012

District	Agriculture		Industry		Services		Total Project Area
	No.	%	No.	%	No.	%	No.
Sri Lanka	**2,519,271**	**3.5**	**2,119,044**	**30.1**	**3,490,388**	**66.4**	**455,327**
Kandy	102,647	22.5	122,918	27.0	229,762	50.5	701,473
Kurunegala	228,482	32.6	216,582	30.9	256,409	36.6	922,393
Gampaha	61,468	6.7	376,356	40.8	484569	52.5	351,763
Kegalle	98,528	28.0	103,831	29.5	149,404	42.5	455,327
Total	491,125	20.2	819,687	33.7%	1,120,144	46.1	2,430,956

Source: Department of Census and Statistics, Labour Force Survey - Annual Report 2012

3. Socioeconomic status

70. **Literacy rate.** According to Department of Census and Statistics – 2012, Gampaha district shows the highest literacy rate about 96.9 % and the least is Kandy at 92.4% which is just slightly lower than the national average of 92.7%.

Table 10: Literacy rate by district - 2012

District	Literacy Rate		Total
	Male	Female	
Sri Lanka	94.1	91.4	92.7
Kandy	94.3	90.9	92.4
Kurunegalla	95.3	93.7	94.4
Gampaha	97.5	96.5	96.9
Kegalle	96.6	93.5	95.0

Source: Sri Lanka Labor force survey, Annual report – 2012- Department of Census and Statistics

71. **Household income**. According to the 'Household Income and Expenditure Survey - 2009/10' of the Department of Census and Statistics, the highest monthly mean per capita income in the project districts is Gampaha at Rs12,300 which is 35% higher than the national average of Rs.9,104 while the lowest is Kegalle at Rs7,457.

Table 11: Mean and median monthly per capita income by district -2009/10

District	Average monthly income	
	Mean (Rs)	Median (Rs)
Sri Lanka	9,104	5,803
Kandy	8,285	5,400

District	Average monthly income	
	Mean (Rs)	Median (Rs)
Kurunegalla	9,866	5,372
Gampaha	12,300	7,251
Kegalle	7,457	5,271

Source: Department of Census and Statistics, Household Income and Expenditure Survey - 2009/10

72. **Employment and Unemployment.** As per the Sri Lanka Labour Force Survey, 2012 Annual report by the Department of Census and Statistics revealed that Kurunegala and Kegalle districts have higher labor participation rate than the national average. Women in 3 of the four districts have higher participation that the national average. Unemployment is highest in Kandy and lowest in Kegalle.

Table 12: Employment and Unemployment - 2012

District	Labour force participation rate (%)			Employment by major industry group (%)			Unemployment rate (%)
	Total (%)	Male (%)	Female (%)	Agriculture	Industry	Services	
Sri Lanka	47.2	66.8	29.9	31	26.1	42.9	4.0
Kandy	45.1	62.9	30.4	22.5	27.0	50.5	7.2
Kurunegala	49.9	70.1	32.2	32.6	30.9	36.6	4.4
Gampaha	43.7	63.2	26.4	6.7	40.8	52.5	3.7
Kegalle	48.5	67.8	31.8	28.0	29.5	42.5	2.9

Source: Sri Lanka Labour force survey, Annual report – 2012- Department of Census and Statistics

73. **Poverty situation.** Across the project districts the poverty had count index is decreasing. Kandy and Kegalle Districts achieved more dramatic poverty reduction from more than 30% to less than7% during the past 13 years. With the high labor participation in the service and industrial sectors, Gampaha has the lowest poverty index at 2.1%. As of 2013, all project districts are either better performing or at par with the national average of 6.7%.

Table 13: Poverty Headcount Index of Affected provinces and districts

Province/Districts	Poverty Headcount Index (%)					
	1990/91	1995/96	2002	2006/07	2009/10	2012/13
Sri Lanka					8.9	6.7
Kandy District	35.5	36.7	24.9	17.0	10.3	6.2
Kurunegalla District	27.2	26.2	25.4	15.4	11.7	6.5
Gampaha District	14.7	14.1	10.7	8.7	3.9	2.1
Kegalle District	31.2	36.3	32.5	21.1	10.8	6.7

Source: Household Income and Expenditure Survey - 2009/10, Department of Census and Statistics, 2011

4. Existing Infrastructure facilities

74. **Energy source of households**. Electricity and kerosene are the main source of energy used for lighting the households as shown in the Table 14 below.

Table 14: Principle type of lightning the occupied housing units - 2012

District	Electricity from national grid	Rural Hydro power project	Kerosene	Solar power	Bio Gas	Other
Sri Lanka	87.0	0.7	11.5	0.7	0.0	0.1
Kandy	92.3	0.7	6.8	0.2	0.0	0.0
Kurunegalla	84.9	1.1	12.4	1.4	0.0	0.0
Gampaha	96.6	0.0	3.3	0.0	0.0	0.1
Kegalle	87.7	1.0	10.9	0.4	0.0	0.1

Source: Department of Census and statistics, 2012.

75. **Drinking water.** From the Department of Census and Statistics (2012) majority of households in the project districts use water from protected wells and pipe borne water for drinking purpose. Kandy District has the most developed domestic water supply system with 50% of the household having access while Kurunegala District relies more on protected well at 60%.

Table 15: Source of Drinking water

District	Protected well	Unprotected well	Pipe born water	Other
Sri Lanka	46.4	4.4	30.5	18.8
Kandy	25.4	3.8	50.5	21.2
Kurunegala	77.7	5.8	5.6	10.9
Gampaha	60.8	2.5	27.1	9.6
Kegalle	51.0	7.8	17.7	23.4

Source: Department of Census and statistics, 2012.

76. **Sanitary facilities.** All project districts have higher percentage of its population having project toilets than the national average of 86.4%.

Table 16: Type of toilets - 2012

District	Private	Sharing with others	Common/Public toilets
Sri Lanka	86.4	11.2	0.7
Kandy	89.3	9.8	0.5
Kurunegala	88.3	10.6	0.2
Gampaha	87.4	12.1	0.2
Kegalle	90.4	8.9	0.2

Source: Department of Census and statistics, 2012.

77. **Education infrastructure.** Of the 9,525 schools in the country almost 27% are located and almost equally distributed in the project district.

Table 17: Functioning Schools by gender of students - 2008

District	Boys schools	Girls schools	Mixed Schools	Total
Sri Lanka	11	159	9,252	9,525
Kandy	11	13	599	621
Kurunegala	6	6	862	874
Gampaha	8	19	503	530
Kegalle	4	3	507	514

Source: Department of census and statistics, 2012.

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

78. This chapter describes anticipated impacts on the environment during pre-construction, construction and operational stages. Feasible mitigation measures were designed based on environment best practices to minimize the adverse impacts or manage to acceptable limits while enhancing the beneficial impacts of the project. Impacts identified here are applicable for improving, rehabilitating and maintenaning of national roads under RMC package of iRoad programme. In addition impacts during the operational phase have been identified mostly based on activities to be undertaken by the contractors during the maintenance period.

A. Pre-construction phase

1. Project induced natural hazards

a. Impacts due to landslides and mitigation measures

79. Several road sections are located within areas with rolling and steep hilly terrain as presented which are prone to landslides particularly during extreme rainfall events.

Table 18: List of chainages by road section prone to landslides

RMC Road Section	Chainages	Total Length (km)
Nittambuwa-Warakapola	*	-
Warakapola-Mawanella	21+320 km – 21+420 km	0.1 km
Mawanella-Kandy	*	-
Katugastota-Kurunegala	1+900 km - 1+950 km 10+500 km - 10+520 km 10+700 km - 10+800 km 13+000 km - 13 +100 km 14 +500 km - 14+550 km 14 +900 km -15 +100 km	0.42 km
PeranadiyaKatugasthota	0+100 km -1+200 km 3+100 km -3+500 km 3+800 km- 3+820 km 4+600 km -4+700 km 6+200 km -6+220 km	1.64 km
Total		2.16 km

***** There were landslide prone areas and at present retaining walls had been constructed to control landslides in identified locations.

80. Since road improvement and rehabilitation is restricted to the available ROW, natural slopes along the candidate roads will not be disturbed. Therefore, possibility of occurrence of landslides is minimum due to this project. However, prior consent should be obtained from National Building Research Organization (NBRO) for roads along which landslide prone locations are already observed and recommendation of NBRO if any should be incorporated to the designs.

b. Relocating of Utility Supply Lines

81. For the road upgrading and improving works electricity power lines, telephone lines and water supply mains located closer to the ROW will need to be shifted. Such utility facilities are

identified in ECOPs prepared for each road to be upgraded and the exact number of utilities to be shifted will be updated during the preparation of specific EMPs. Proper co-ordination with the concerned authorities in advance will help to reduce the nuisance from temporary blockades and service interruptions of these utility supply lines. Risks of accidental disruption can be reduced by ensuring that machinery such as excavators are operated by trained personnel, and that operations are adequately supervised. Advance notice to the public about the times that the utility supplies will be disrupted will help the public to adjust to the situation before hand, thereby minimize the difficulties that they will face in the case of sudden disruption of these services.

Table 19: List of utilities and other community structures that may along 10m from the ROW

RMC Road Section	Total Number of Electric Poles	Total Number of Telecommunication Poles	Other Utility and Community Structures
Nittambuwa-Warakapola	649	651	59
Warakapola-Mawanella	2811	1510	238
Mawanella-Kandy	432	646	217
Katugastota-Kurunegala	1603	2463	177
Peradeniya - Katugasthota	587	390	42
Total	6082	5660	733

c. Sensitive Ecosystems and Physical Cultural Resources

82. Within 10 kilometers from the road alignment a number of the sensitive ecosystems and physical cultural resources are located. The RMC road upgrading will not encroach in any of the following areas including prescribed buffer zones:

- Peradeniya Royal Botanical Garden Located along the Mawanella -Kandy road section, the garden is known for its rich collection of orchids, medicinal plants, and endemic fauna attracting 1.4 million visitors each year.
- Sacred City of Kandy. Located at the end of the Mawanella-Kandy road section, the Sacred City is a UNESCO World Heritage Site which is a collection of monuments centred around the Sri Dalada Maligawa or the Temple of the Tooth relic of Buddha.
- Udawatta kelle Royal Forest Park. Also located along the Mawanella-Kandy section along the Dalada Maligawa hillside overlooks the Kandy Palace and serves as catchment of the Kandy Lake. Declared as a forest reserve in 1928 to arrest further deterioration from human encroachment. Notable features of the reserve includes the a giant 200 to 300 years old "Pus Wela" or 'Entadapusaetha' lianatre, the water pond, "Kodimale" or highest peak, Senkanda Cave, and the Garrison cemetery.

B. Construction phase

1. Increase of local air pollution, noise and vibration

83. Earthworks, pavement improvement operations, quarry operations, operation of hot mix plant, operation of construction vehicles during construction period will release aerial contaminants (dust and fumes) increasing local air pollution. Heavy machinery used for construction work will create noise and vibration which will cause nuisance to residents in

settlements. Locations such as schools, temples are particularly vulnerable to nuisance from noise. Table below gives the identified noise levels of various construction equipment and machinery at a distance of 7 m from the source.

Table 20: Typical construction equipment used in road construction, noise rating, unobstructed at obstructed noise level 10m from the source

Equipment	Noise level at 7 m in dB(A)	Predicted noise 10m from source, unobstructed	Predicted noise 10m from source, obstructed by 1.5m movable barrier
Compressor	109	81	45.2
Truck, scraper or grader	94	66	30.2
Pneumatic drill	85	57	21.2
Excavator	112	84	48
Loader	112	84	48
Roller vibrator	108	80	44.2
Poke vibrator	113	85	49.2
Sound reduced jack hammers and lock drills	82	54	46.2

84. Heavy machinery used for construction work such as vibrators and compactors and operation of heavy vehicles at higher speeds will create noise and vibration which will cause nuisance to residents in settlements. And since baseline noise and vibration values are low in rural areas, the project induced impact will be severe. Locations such as schools, hospitals and places of worship are particularly vulnerable to nuisance from noise. Buildings located closer to the road trace will have cracks due to construction vibration.

85. The impact of construction noise, vibration and emissions at sensitive areas can be mitigated by;

- The establishment of 1.5m movable noise barrier in-between the source and the receptor along can substantially reduce the noise level below the 55dBA applicable standard
- Ensuring that construction plant and equipment is maintained to high operable standards, and that exhaust baffles are fitted and maintained in a high serviceable condition.
- Limiting operations to times when they have least impact in settlement areas, especially near schools and other sensitive locations such as hospitals and places of worship.
- Vibration should be controlled with the agreement of the Engineer at locations where sensitive receptors are found.
- Regular sprinkling of water to dampen the construction surface will reduce the emission of dust.

2. Deterioration of surface water quality due to silt runoff, emissions and spoil from labour camps

86. In order to improve roads and the rehabilitation works clearing of roadside vegetation near the edge of the existing road, excavation and removal of unsuitable soil, cutting trenches for roadside drains and removal of degraded surface of roads will be required. Such activities may develop temporary piles of soil and debris along the road edge.

87. All these activities could cause temporary erosion and therefore siltation of nearby water bodies would occur. And if un-compacted earth surfaces or soil dumps are left exposed to rain or if they are placed near water bodies and paddy lands soil erosion will be possible. Sediments could drift away and get silted up in the side drains, adjoining streams and irrigation canals causing deterioration of water quality.

88. Run off contaminated with oil, grease, and emissions from construction vehicles, equipment and material stores, wastewater and solid waste from worker camp sites will contain pollutant materials. Such materials have the potential to cause deterioration of surface water sources if they are released to adjacent water bodies.

89. Following measures should be adopted to mitigate deterioration of surface water quality due to silt runoff, emissions and spoils from construction and labour camps;

- Reuse of soil removed for filling sites if any as much as possible and unsuitable materials can be used to refill borrow pits
- Where earthworks take place adjacent to water bodies, silt traps shall be installed prior to the commencement of earthwork activity
- All temporary unsuitable soil dumps and debris should be removed from site to approved disposal sites
- If temporary soil dumps are left at the site for a long time proper remedial measure to minimize soil erosion should be practiced
- Temporary soil dumps should not be placed near water bodies
- All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction,
- Suitable local drainage measures should be established to properly drain the water in the construction area to the nearby waterways
- Establishment of suitable mulch to cover the slopes of embankments
- All materials (including toxic and hazardous material) required for construction shall be stored at secure and managed sites, sited away from water bodies,
- Construction vehicles and equipment will be maintained in good operable condition, ensuring no undue leakage of oil or fuel,
- Construction vehicles and equipment will be serviced only at properly managed and equipped workshops and waste oil will be collected and disposed at approved locations,
- Sanitation arrangements will be made at worksites and any accommodation facilities provided for workers' accommodation, ensuring that no raw sewage is released into drains or water bodies.

3. Landslides during construction stage

90. Since the proposed upgrading is designed to restrict to the available ROW of roads, there will be minimal disturbance to the road side natural slopes and therefore possibility of occurring project induced landslides is insignificant. However proper coordination should be maintained with NBRO for roads which already have landslides or slope failures along its trace when construction activities are carried out and any recommendation from NBRO should be adhered.

4. Social and Environmental Impacts due to Establishment of Labour Camps

91. Labour camps may need to be established near the road alignment and improper sanitation, wastewater and solid waste disposal risk contaminating nearby surface water sources. Stagnant water from the labour camp can create mosquito breeding and vector for communicable diseases to the workers and host communities. Social conflicts may arise due to use of illicit liquor and unpleasant behaviour which causes inconvenience to local community.

92. Labour camps will be located at least 100m away from the major water resources. Proper sanitary facilities will be provided to the labour camps and proper way of disposing any wastewater and other waste matter generated from the camps as agreed with the Public Health Inspector (PHI) will be strictly observed.

93. Maximize recruiting of local labour to minimize the need for migrant workers and avoid potential and health conflicts with the host community. Awareness programs should be conducted targeting workers as well as local community in order to minimize and avoid any such conflicts.

5. Disruption to Traffic/Transportation

94. Disruption of access to infrastructure or social resource due to construction activity will cause nuisance and to a certain extent additional cost to the public in terms of longer travel period due to diversion or traffic. It will also pose risk of accident to motorist at night if these blockages and disruption are not clearly demarcated

95. Following measures should be considered to minimize the impacts on existing traffic;

- Providing advance information to the public about the planned construction works,
- Properly mark by-passes and one-way section including barriers, reflectors, and night illumination
- Use of flagmen control traffic flows at constricted sites, including safe crossing for pedestrians especially near town areas and schools.

C. Biological impacts

96. There are no anticipated impacts on the protected areas and sensitive ecosystems. No project road is located in or within 100m of any forest, wildlife reserve, and sanctuaries.

97. Most of the avenue trees that may be affected (within 2 meters from the edge of the road) are fruit and ornamental species like Amba (*Mangifera indica*), Pol (*Cocos nucifera*), Kottamba (*Terminalia catappa*), Acacia (*Acacia auriculiformis*), Kohamba (*Azardirachcta indica*) and Robarosia (*Tebebuia rosea*). Loss of avenue trees will be compensated at 1:3 in close coordination with the Forest Department on species selection and management. If there is no space available along the road for tree planting, these trees will be planted on home gardens, schools, government institutions, private institutes and government institutes in the project area.

1. Establishment of invasive species

98. During the construction stage, soil brought into the project area from outside may contain seeds of alien invasive species. Also, the construction machinery and vehicles can accidentally introduce seeds of such plants if used without proper cleaning. Temporary facilities such as labour camps, dumping sites, soil storage sites are potential locations where invasive

plant species can get established in quick succession. This will negatively affect both the natural and manmade habitats.

99. It is observed that several alien invasive species have dominated the vegetation in certain sections. Therefore, there is a possibility that such invasive species may invade new areas if the waste plant material generated during site clearing and dredging activities (if any) is disposed to areas away from the project.

2. Adverse impacts on terrestrial fauna

100. No impacts of fauna is anticipated as no road is encroaching or located near forest, wildlife reserve, and sanctuaries.

3. Impact on aquatic fauna and flora

101. There will be soil erosion from stock piles, excavation, oil and grease from construction vehicles which will deteriorate the water quality of the receiving water body including increase in turbidity leading to temporary impairment to sustain aquatic fauna and flora.

102. This impact could be mitigated through proper siting of all hot mix plants, crushing plants, workshops, depots and temporary worker camps and storing of toxic and hazardous materials at approved locations, and recycling and dumping of solid waste matter at locations approved by local authorities, maintenance of vehicles and equipment in good operable condition, ensuring no leakage of oil or fuel and the fitting of proper exhaust baffles. No solid waste will be dumped into water bodies.

4. Impacts Due to Extraction and Transportation of Construction Materials

103. Sources of construction materials such as soil/metal could be obtained from the quarry and borrow sites. Extraction and transportation of materials from such sites will cause noise, vibration, dust, induced slope failure, negative visual impacts, creation of mosquito breeding sites, and damage to private properties and minor roads. Heavy trucks transporting materials to construction sites will cause disturbances to local traffic, damage minor roads, and increase dust and noise nuisance.

104. This could be mitigated by using quarry and borrow sites approved by Geological Survey and Mines Bureau (GSMB). Spoils will not be dumped along road side and near water bodies. Spoils, top soil and denuded materials will be reused for restoring borrows sites and transported materials should be covered using polythene or any other suitable material to avoid dust blow. Keeping provisions for repairing and restoration of the roads used for the transportation of construction materials by the contractor in the contract document and use of covers over transported materials to guard against dust blow and water spraying to dampen the surface will mitigate the impacts due to transportation of construction material.

5. Alteration of surface water hydrology of waterways

105. The construction of culverts and bridges may temporarily block or divert streams, disturbing the natural drainage pattern and create flooding condition in the area. Improperly stored construction materials can block natural drainage pattern.

106. The contractor will take all measures necessary or as directed by the Engineer to keep all drainage paths and drains clear at all times .Temporary storage of material will made only in approved sites by the engineer where natural drainage is not disturbed. All waste will be disposed at locations approved by the Local Authority. If flooding or stagnation of water is caused by contractor's activities, contractors shall provide suitable means to prevent loss of access to any land or property and prevent damage to land and property.

107. No material including excavated soil will be allowed to be disposed near water bodies or in paddy lands, even on temporary basis, to curtail any undue wash off of soil and debris to nearby water bodies and agricultural lands. The contractor will ensure that not to damage or block any manmade drainage canal even for temporary basis. If blocked, the contractor will remove such debris without any delay.

6. Requirement of lands for the road upgrading

108. The land acquisition has not been envisaged for this project expecting that available right of way will be adequate to carry out road improvements. During construction, temporary occupation of privately owned land may be required for stock pilling and use as yards. If such a necessity occurs the contractor with the concurrence of project staff will sign a temporary occupation contract with the owner.

7. Safety of Workers and Public

109. Construction activities pose potential hazards to both workers and public. Safety to workers and the public will be enhanced by;

- Proper briefing and training of workers on safety precautions, and their responsibilities for the safety of themselves and others
- Provision to workers of Personnel Protective Equipments (PPE) to be used at every time involved in when construction activities and high visibility jackets at night
- Ensuring that plant and vehicle operators are properly licensed and trained
- Arranging for the provision of first aid facilities, readily available trained paramedical personnel, and emergency transport to the nearest hospital
- Arranging for regular safety checks of vehicles and material, and allocation of responsibility for this
- Ensuring that quarry operations, particularly blasting is carried out and supervised by trained personnel, that explosives are stored in a secure location and that all due precautions are taken to ensure that blasting does not induce rock falls
- Provision of hazard warning signals around construction sites, and directing vehicle and pedestrian traffic away from work sites
- Provision of traffic management plans during construction including barricading of openings and lighting at night where required.

8. Management of Construction Debris/Waste

110. Debris can be generated by dismantling of existing pavement. Collected dust and unused iron bars or damaged support structures constitute significant wastes. Mitigation for solid waste from construction camp has been given in construction camp section.

111. The existing bitumen surface can be utilized for paving of cross roads, access roads, and paving works in construction sites and camps, temporary traffic diversions, haulage routes, etc.

112. All excavated materials from roadway, shoulders, verges, drains, cross drainage and the like may be used for backfilling embankments, filling pits, and landscaping to the extent feasible. Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority. The bituminous wastes shall be disposed in an environmentally accepted manner as follow:

- Unusable and surplus materials, as determined by the Project Engineer, will be removed and disposed off-site.
- Unproductive/wastelands shall be selected for dumping sites.
- Away from residential areas and located at downwind side of these locations.
- Dumping sites do not contaminate any water sources, rivers etc, and
- Dumping sites have adequate capacity equal to the amount of debris generated.
- Public perception and consent from the village about the location of debris disposal site has to be obtained before finalizing the location.
- Form works will be re-used to the extent possible, more than 20 times as dictated by good practice. All stripped formworks will be examined for any damage and rectified in the workshop for re-use. Rectification includes plugging holes, and straightening bent steel props.

D. Operational Phase

1. Impacts on water resources

113. Improvements to the road drainage will result in improved storm water flows, and reduce the tendency of blockages to occur in roadside drains. Risks to the public health caused by such stagnant water bodies by acting as disease vector breeding places will be reduced. By designing the drains to withstand appropriate storm events will reduce the risk of any operational failure of the drainage system and regular maintenance will further reduce the chances of failure.

114. In addition, improper handling of chemicals used for maintenance works such as paints, pesticides, asphalt etc. will also degrade water bodies located nearby to the road. Proper handling of such chemicals under strict supervision will help to minimize the water pollution during the maintenance period.

2. Disposal of unsuitable material

115. De-silting of drains, culverts and bridges, removal of road side vegetation and removal of damaged/degraded road surfaces during the maintenance period will generate unsuitable soil, vegetation and debris. If these materials are disposed to road sides, agricultural lands, areas susceptible to floods, there is a possibility of siltation of water bodies, agricultural lands and blocking of drainage paths due to washing away by storm water. Proper disposal of all unsuitable material resulted from periodic and routine maintenance activities in the approved locations will minimize this impact.

3. Extraction of material for repairing and maintenance works

116. For repairing of maintenance of carriageway and other structures, material such as gravel, aggregates and sand will be required. And mitigation measures specified in 5.2.7 above (Impacts due to extraction and transportation of construction materials) could be adopted to minimize impacts due to maintenance activities of the roads.

4. Pedestrian and commuter safety

117. Improvements to the road surface will be conducive to safe vehicle travel at higher speeds. Such speeds may increase the incidences of accidents. Incorporating the following measures could offset this negative impact;

- Provision of centreline road marking where possible, edge delineation etc...
- Provision of clearly marked signing at townships, sensitive areas such as schools, temples
- Enforcement of speed limits and other traffic rules, especially within the town limits
- Placing of sign boards for animal crossings etc.

118. Furthermore, safety of road users could be ensured during repairing of carriageway and hydraulic structures by placing standard sign boards, barricading of the repairing site etc...

5. Air quality and noise

119. Higher speed limits will reduce the travel time through the area and better surface conditions will reduce the number of accelerations and decelerations in travelling thereby reduce the emissions to the air. The project is therefore expected to have a positive effect on overall air quality. Clear signing will be put in sensitive areas such as schools, temples to warn drivers and avoid making unnecessary horn signals.

6. Ecological Impacts

120. With the improved road surfaces number of vehicles and the speed will be increased. Further, certain number of animals will attract to tarred road surfaces (e.g., especially the reptiles) as the road surface is warm during the night. Moreover there are some domestic animals such as cattle, cats and dogs frequently approaching the roads particular during the nights. This will result in the increase number of animal accidents and disturb their natural movement. This impact could be reduced up to some extent if any by placing warning sign boards (for cattle) at least 1km ahead of approaching such areas.

E. Positive Impacts of the Project

1. Socio - economic benefits

121. Following socio-economic benefits are expected to transmit to the affected populations of roads selected under the iRoad Program.

- Improvements in road connectivity reduce regional disparity, open up new markets, generate employment opportunities and thereby reduce poverty in lagging areas.
- An efficient and convenient transportation system will accelerate the economic growth by facilitating easy and faster mobility of people, goods and services and reducing disparities in regional development.

- The selected national road network improvement in two provinces will boost economic activities including potential growth in industries, tourism, and agriculture in lagging areas.
- Good road network will reduce transport cost and travel time leading to increase the profit margin of the small scale farmers. The market expansion increases the marketability of the product.
- Similarly, better road network will provide access to schools and other services. In the long term this will improve education level and other associated life values (health status, awareness and social skills) of the people.

VI. CLIMATE CHANGE IMPACTS AND RISKS

122. The Transport Emissions Evaluation Model for Projects (TEEMPT) developed by Clear Air Asia[6] with support from ITDP, ADB, Cambridge Systematic and the United Nations Environment Programme (UNEP) – Global Environment Facility (GEF) Scientific and Technical Advisory Panel. TEEMP is an excel-based, free-of-charge spreadsheet models to evaluate emissions impacts of transport projects.

123. TEEMPT was utilized to assessed the CO2 gross emissions with- and without the project improvements which is mainly surface roughness and directly impacts speed and fuel consumptions. It also allows the assessment of future congestion, if they will occur in the future given the projected increase in traffic and road capacity with-and without the project improvements like lane configuration and road roughness.

A. Key road upgrading features

124. iROAD will upgrade Sections of A001, A010, and B365 under RMC arrangement total aggregated length of 124.3 kms distributed across Western, Sabaragamuwa, Central, and North Central Provinces. No land acquisition will be allowed and all improvements will be limited to the existing 2-lane configuration with 4.5-6.5 m carriageway with an asphalt concrete surface. Road roughness will decrease from the general condition of 5.0 m/km to 2.5 m/km. Other improvements include the repair or reconstruct damaged culverts, introduction of earth drains for all road sections and built up drains where necessary, removal of any irregularities that are on the existing vertical profile, and road safety appurtenances.

125. Traffic forecast were taken from the economic analysis for each road section disaggregated into vehicle types and share to the annual average daily traffic.

126. Road capacity of 7,200 PCU/lane/day for rural roads was adopted for the project. Emission factors were mostly taken from the CBCP/MOEF (2007) Draft Report on Emission Factor Development for Indian Vehicles, the Automotive Research Association of India, and C. Reynolds et.al (2011) Climate and Health Relevant Emissions from in-Use Indian for three-wheelers rickshaw.

127. Finally, emission from RMC road rehabilitation was equated to the CO2 emissions stemming from the different activities related to the rural road construction in Sri Lanka at 11,000 kg/km as estimated by R. Santhini (2006)[7].

B. Estimated Carbon Emissions

128. For each kilometer of rural road upgrading in Sabaragamuwa, CO2 emission from construction is estimated at 11 tons. Total annual emissions for the RMC roads is estimated at with the project is estimated at 16,067 tons. The Colombo-Kandy being the most important road link of the country connecting the biggest cities is the biggest contributor at 12,099 tons/year with the project. The impacts of improving the road surface will allow vehicles to run at a higher

[6] A network of 250 organizations in 31 countries established by the Asian Development Bank, World Bank, and USAID to promote better air quality and livable cities by translating knowledge to policies and actions that reduce air pollution and greenhouse gas emissions from transport, energy and other sectors.

[7] R. Santhini (2006). Impact of Sri Lankan Rural Roads on Greenhouse Gas Emissions & Mitigation and Climate Change – A Case Study.http://www.rshanthini.com/tmp/CP551SD/RuralRoadandGHG.pdf

speed and avoid congestion explain the lower emission intensities with the project compared to business as usual scenario considering the predicted increase in traffic.

Table 21: Estimated CO2 Emission by Road Section, BAU and With Project RMC Roads

CO2 Emissions	Road Section		
	Colombo-Kandy (A001)	Katugastota-Puttalum (A010)	Peredeniya-Katugastota (B365)
Tons/km			
BAU	2,312	660	670
With Project	2,272	653	659
Ton/Year			
BAU	12,312	2,466	1,558
With Project	12,099	2,436	1,532

C. Climate Risks and Adaptation needs

129. Climate risks were identified following both top down and bottom up approaches. Under the top down approach changes of key climate parameters, mainly temperature and precipitation were projected for 2050 using an ensemble of Global Climate Models (GCMs). Given the projected variations of temperature and precipitation the project roads were screened for 9 types of climate risks:

- Landslide triggered by increased precipitation
- Fire
- Flood
- Drought
- Tsunami
- Cyclone wind
- Cyclone surge
- Sea level rise
- Coastal erosion

130. Climate risk maps based on information from the GCMs were created for the project area using Geographic Information System (GIS) maps. After overlaying the road locations on the climate risk maps, low to medium risks identified for the project roads were flooding and landslides triggered by precipitation.

131. **Landslides triggered by precipitation**. Heavy rains can cause disruption of the road networks, decreased accessibility, erosion of roads and embankments, surface water drainage problems, slope failures, landslides, among others. Increased river flow resulting from precipitation and storminess may result in damages to bridges. Bridge/culvert capacities are reduced or exceeded, causing upstream flooding to occur. Key engineering measures taken to address these risks in the design are: i) increase in embankment height, ii) construction of new side and lead away drains, iii) construction of new culverts or widening of existing ones and iv) construction of new bridges. The costs of these measures are integrated in the IEEs of Sabaragamuwa and Central Provinces.

VII. INSTITUTIONAL REQUIREMENTS AND ENVIRONMENTAL MANAGEMENT PLAN AND GRIEVANCE REDRESS MECHANISM

A. Institutional Arrangements

132. The Ministry of Highways, Ports and Shipping (MOHPS) is the Executing Agency (EA) and the secretary to the ministry will be responsible for decisions on overall approvals and operational policies of the project. RDA will be the IA and within RDA there will be a PIU. The PIU will be responsible for implementing the project and managing detailed design and supervision of the construction works and ensuring that all environmental safeguard requirements in accordance with this EARF are met. The PIU will be headed by a full time Project Director (PD) and supported by a team of engineers from RDA. The PIU will have a safeguards team with sufficient social and environment safeguards officers to cover the quantum and geographic distribution of works in all provinces under the investment program. RDA will have a Surveys and Preparation of Engineering Design (SAPE) team that will be responsible for conducting studies including environmental assessments of all project roads before the processing and approval each project. The Project Implementation Consultants (PIC) will support the PIU for supervision of the design and construction works by the civil works contractor. The PIC team will include a team of environment safeguards consultants for conduction of regular monitoring of safeguards implementation on site.

B. Responsibilities

133. Detailed list of responsibilities of the EA, IA, PIU, PIC, SAPE, and contractors for implementation of environmental safeguard matters are presented in Table 22 below.

Table 22: Responsibilities for Environmental Safeguards Implementation

	Agency	Responsibility
1.	Ministry of Highways, Ports and Shipping (EA)	– Make final decision on roads to be included under the investment program – Overall responsibility for project design, feasibility, construction and operation and guide RDA to play its role as the IA – Ensure that sufficient funds are available to properly implement all agreed environmental safeguards measures – Ensure that all projects and roads, regardless of financing source, complies with the provisions of ADB's SPS 2009 and GoSL's environmental laws and regulations – Ensure that tender and contract documents for civil works include all relevant parts of the environmental assessment and project agreements – Submit annual safeguards monitoring reports to ADB
2.	Road Development Authority (IA)	– Ensure that Project complies with ADB's SPS and GoSL laws and regulations – Ensure that the project complies with all environment safeguard requirements as given in this EARF – Ensure that tender and contract documents for civil works include all relevant parts of the environmental assessment and project agreements
3.	Project Implementation	– Ensure that Project complies with ADB's SPS and GoSL

	Agency	Responsibility
	Unit (PIU) with support of safeguards team	laws and regulations – Ensure that the project complies with all environment safeguard requirements as given in this EARF – Ensure that the environment checklist is completed each and every project road – Review and approve the environment checklists – Based on the findings of the completed environment checklist for all project roads complete one Rapid Environment Assessment (REA) checklist as required by the ADB SPS for the respective project – Ensure the preparation of one province level IEE report based on the information from the project road environment checklists and other consultations and literature review as necessary – Ensure the preparation of due diligence reports on the environment safeguards performance of the earlier project before the approval of the next project – Obtain feedback on draft IEE report findings from major stakeholders where necessary and facilitate necessary revisions – Facilitate public disclosure of safeguard documents where necessary in accordance to the requirements of ADB and CEA – Ensure that environmental protection and mitigation measures in the Environmental Assessment report and EMP are incorporated into the design (level 2 design) – Ensure that requisite measures from the Environmental Assessment report and EMP are incorporated into the bid and contract documents – Ensure that necessary provisions are made in the contract documents for the EMP to be updated in accordance with revisions in the final detailed design (level 1 design) – Organize environmental management capacity building activities for PIU and orientation and awareness training for PIC and contractors as described in Para 21 of this EARF. – Ensure that RDA has obtained necessary environmental clearances, permits, license(s) etc. from CEA and other agencies as specified in this EARF (Table 3) – Review and approve the contract package specific EMP's and EMOP's prepared by the contractor – Ensure that contractors obtain necessary environmental permits, license(s) etc. from respective agencies as specified in this EARF (Table 3) prior to commencement of civil works contracts – Facilitate the establishment of a grievance redress mechanism, as described in this EARF and respective IEE report, to receive and facilitate resolution of affected

	Agency	Responsibility
		peoples' concerns, complaints, and grievances related to environment safeguards – Ensure that all mitigation measures as given in the EMP are implemented properly – Ensure proper conduction of environmental monitoring during pre-construction, construction and operation phases – Review and approve the monitoring checklists and reports prepared by the PIC and conduct field spot checks to verify the accuracy of the monitoring checklists – Ensure annual environmental monitoring reports are prepared and submitted to ADB for disclosure on their website on an annual basis – Identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to ADB and during project implementation – Facilitate additional environmental assessment (if required) for specific sub-projects and submit to ADB and CEA for review and clearance – Review and approved EMP's if they get updated and revised by the contractor
4.	ESDD, RDA	– Facilitate and act as resource persons during training workshops under the investment program – Provide technical advice and support as necessary to the PIU – Monitor implementation of safeguards under the investment program on a bi-annual basis as necessary
5.	SAPE team under RDA	– Conduct field surveys and complete the environment checklist for each and every project road – Based on the findings of the completed environment checklist for all project roads complete one Rapid Environment Assessment (REA) checklist as required by the ADB SPS for the respective project – Prepare one province level IEE report and standard EMP based on the information from the project road environment checklists and other consultations and literature review as necessary – Make necessary revisions to the IEE based on feedback from the PIU, PIC, ADB or other agencies such as CEA as necessary
6.	Project Implementation Consultants (PIC)	– Review and approve the contract package specific EMP's and EMOP's prepared by the contractor – Daily on site supervision for implementation of environmental safeguards – Completion of monitoring checklists during pre-construction, construction and operation and maintenance stages for each road – Close coordination and communication with the contractor

	Agency	Responsibility
		to facilitate implementation of all mitigation measures identified in EMP – Preparation of monitoring reports and submission to PIU, RDA – Provide technical support and advise for addressing complaints and grievances and participate in resolving issues as a member of the GRC – Provide technical advice and on the job training to the contractors as necessary – Preparation of annual monitoring reports based on the monitoring checklists and submission to RDA for further submission to ADB – Preparation of due diligence reports on the environment safeguards performance of the earlier project before the approval of the next project – Review the environmental assessment report prepared by the SAPE team under RDA – Review and approve updated/revised contract specific EMP's as necessary
7.	Contractor	– Based on the standard EMP, environment checklists for each road and the detailed design (level 1 design) prepare a contract package specific EMP for approval by the PIC and/or PIU before start of physical works – Based on the standard Environmental Monitoring Program (EMOP) on collection of environmental quality data prepare contract package specific (EMOP) for approval by the PIC and/or PIU before the start of physical works – Ensure that adequate budget provisions are made for implementing all mitigation measures specified in the EMP – Participate in induction training on EMP provisions and requirements delivered by the PIU – Obtain necessary environmental license(s), permits etc. from relevant agencies as specified by EARF (Table 3) for associated facilities for project road works, quarries, hot-mix plant etc. prior to commencement of civil works contracts – Implement all mitigation measures in the EMP – Ensure that all workers, site agents, including site supervisors and management participate in training sessions delivered by PIU. – Ensure compliance with environmental statutory requirements and contractual obligations – Collect the baseline data on environmental quality before the start of physical works and continue collection of environmental quality data as given in the Environmental Monitoring Plan during construction and operation

	Agency	Responsibility
		– Participate in resolving issues as a member of the GRC – Respond promptly to grievances raised by the local community or any stakeholder and implement environmental corrective actions or additional environmental mitigation measures as necessary. – Based on the results of EMP monitoring, cooperate with the PIU to implement environmental corrective actions and corrective action plans, as necessary. – Annually review the road specific EMP and update it if required
8.	ADB	– Review REA checklist and endorse or modify the project classification and recommend the ToR for the Environmental Assessment report – Review IEE reports and disclose the draft and final reports on the ADB's website as required – Issue project approval based on IEE reports; – Monitor implementation and monitoring of EMP through due diligence missions – Provide assistance to the EA and IA of project roads, if required, in carrying out its responsibilities and for building capacity for safeguard compliance – Monitor overall compliance of the project roads to this EARF – If necessary provide further guidance to the IA on the format, content, and scope of the IEE reports and annual or semi-annual monitoring reports for submission to ADB
9.	CEA	– Review and approve Environmental Assessment reports required by the project as per GoSL environmental laws – Issue, and renew environmental licenses as required by the contractor and PIU during the project cycle – Undertake monitoring of the project's environmental performance

C. Environmental Management Plan and Monitoring

134. Environmental Safeguards Manual of RDA and the ADB SPS, outlines the requirements for an Environmental Management Plan (EMP) which is presented as a matrix developed based on best practices for environmental management. This IEE report includes one general or standard EMP for the national/RMC roads as given in Appendix 6.1. These standard EMPs cover all impacts and mitigation measures identified within the respective province. Contract package specific EMP's will required to be prepared by the contractor by referring to the standard EMP, road specific information in the environmental checklists and the detailed design (level 1 design). All costs for implementing the mitigation measures must be included in the Bill of Quantities (BOQ) by the contractor as implementation of the EMP will be the responsibility of the contractor and the PIU will oversee the effectiveness of the implementation with the assistance of the PIC.

135. Contractors who implement rural RMC package will be responsible to keep the road in operational condition for a period of 7 years after reconstruction. Therefore the EMP has been

modified accordingly paying more attention on the environmental impacts and mitigation measures during the operational stage together with reconstruction stage. A standard EMP prepared for RMC package is attached in Annex 6.1.

136. Monitoring of EMP implementation will be carried out during the preconstruction, construction, and operation and maintenance stages of the project. Based on the EMP, environmental monitoring checklists (EMC) will be prepared by the PIC for each of these stages. The EMC monitors the degree of compliance of the mitigation measures proposed in the EMP in all three stages. Every road must have at least one EMC completed during pre-construction, one to three[8] during construction depending on the length of the road and one per year during operation and maintenance. Sample EMC based on the standard EMP is provided in Appendix 6.1 for national roads. Records of these completed monitoring checklists must be systematically maintained within the PIC and/or PIU office. Based on these records and site visits monitoring reports will be prepared during the construction and operation stage on an annual basis[9]per province and submitted to ADB for disclosure on the ADB website.

137. In addition there will be an Environmental Monitoring Plan (EMOP) based on the project cycle to monitor EMP implementation by measuring environmental parameters. During the pre-construction phase baseline data on air, water quality and noise levels will need to be collected. This data will provide baseline information on the existing conditions which could be used to compare the changes in quality levels during construction and operational phases. Such a comparison will reflect how effective the EMP is and help to revise it to rectify any shortcomings that will cause any adverse impacts. Appendix 6.1 presents a sample EMOP prepared for national/RMC roads. Based on these sample or standard EMOP's the contract will be required to prepare contract package specific EMOPs.

138. Furthermore the contractor will also be responsible for updating EMP, EMC and EMOP if there are any significant changes in the project site conditions or engineering design.

D. Grievance Redress Mechanism

139. Grievances from the affected people on social and environmental issues during project implementation will be addressed mainly through the existing local administrative system. Depending on the nature and significance of the grievances or complaints, grievances will be addressed at three levels. The first will be at the grass roots level where complaints will be directly received and addressed by the contractor, PIC or PIU representative on site. Grievances which are simple but still cannot be addressed at the grass roots level will be addressed at the Grama Niladhari (GN) level. More complex grievances which cannot be addressed at the GN level will be addressed at the Divisional Secretariat (DS) level. There will be a Grievance Redress Committee (GRC) at the GN and DS levels.

140. At the GN level the GRC members will be:

[8] The monitoring checklist during construction stage will be completed three times when the progress of physical works is 25%, 50% and 75% respectively. This may not be practically feasible for shorter roads that are only 1 to 3 km long. Hence for these shorter roads only one completed monitoring checklist during construction stage will be adequate.

[9] The first annual monitoring report will cover the period starting from the date of first contract award.

i)	Grama Niladari of the area	Chairman
ii)	Representative of PIU	Secretary
iii)	Representative of Supervision Consultant	Member
iv)	Representative of Contractor	Member
v)	A community member/religious leader	Member
vi)	Woman representative from the local community	Member

141. At the DS Level GRC members will be:

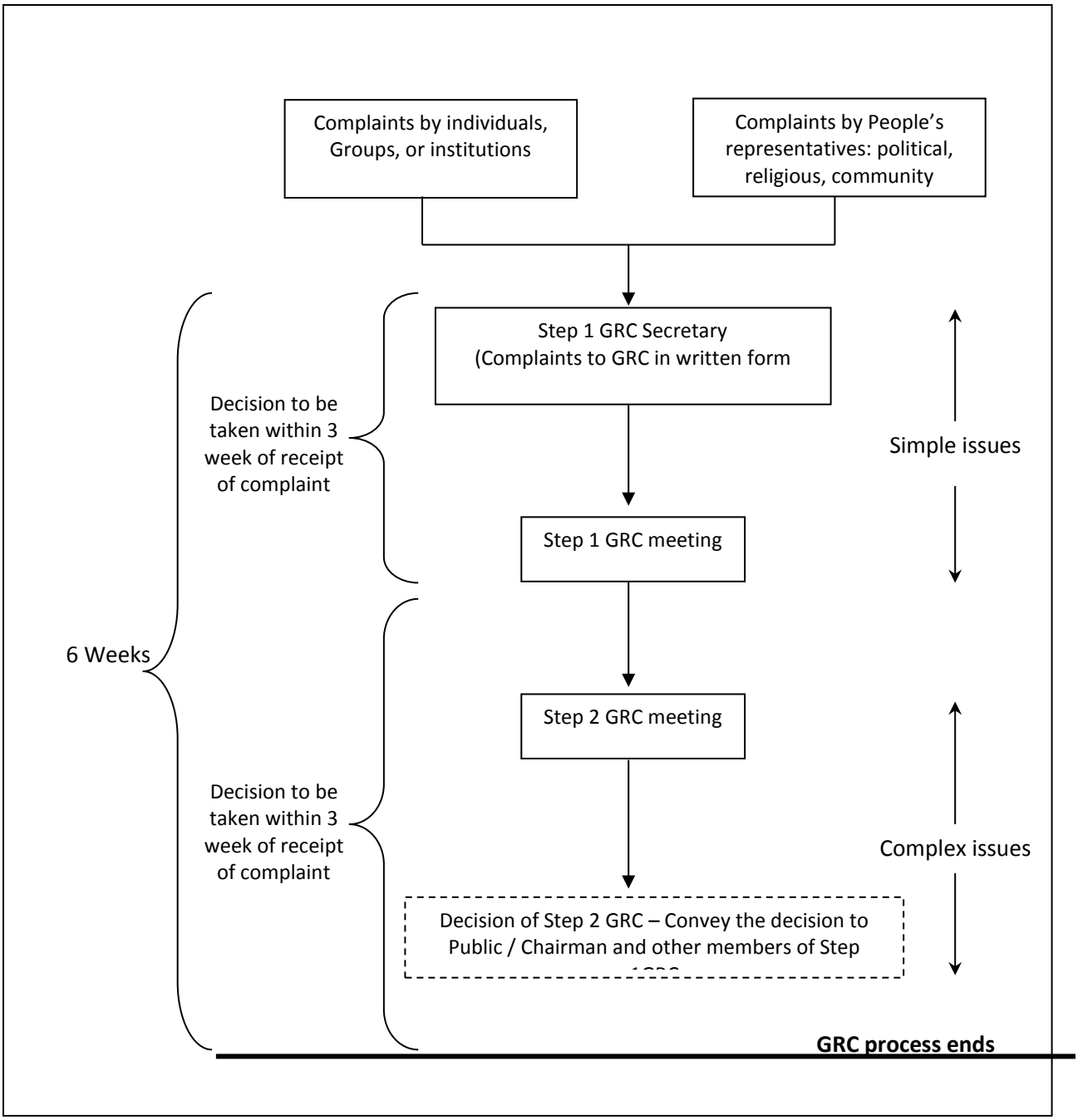
i)	Divisional Secretary of the area	Chairman
ii)	Representative of PIU	Secretary
iii)	Grama Niladari	Member
iv)	Representative of Supervision Consultant	Member
v)	Representative of Contractor	Member
vi)	Representative of a social organization (NGO/CBO) of the area	Member
vii)	A community member/religious leader	Member
viii)	Woman representative from the local community	Member

142. To make the GRM process gender responsive the GRC will include one woman member to represent the local community women. Further when grievances or complaints are submitted to the GRC, both women and men complainants will be treated equally and necessary measures will be taken to address the grievance in the best way possible.

143. Recommended steps with timeline on the operation of the GRM is provided in Figure 6.1. Adjustments may be made to the GRM during processing of succeeding tranches if necessary and accordingly described in the respective IEE. In addition a complaints contact person will be designated within the PIU to help address all concerns and grievances of the local communities and affected parties. Contact details of this person will be provided in the project information display board that will be placed at the project site.

144. The flow chart of the GRM is presented in the succeeding Figure.

Figure 6.2: GRM process



145. For RMC roads, the contractor will be required to establish an information centre for receiving and addressing complaints or grievances and forwarding them to the PIU and PIC as necessary.

VIII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. One on one consultation

146. One on one consultation were held with local community people living in the project area from 06.08.2014 to 11.08.2014. A summary of the one on one public consultation is given in Annexure 7.1.

147. People in the project (a total of 229 males and 122 females) area have positive ideas about the road development and their ideas indicate the importance of the road network development in the Sabaragamuwa and Central provinces. The main benefits perceived by the public are listed below.

- Easy transportation for people and agro products
- Easy access to main towns
- Ability use roads in all weather conditions
- Less travel time for school children
- Improvement in living standard of people
- Security for women, children and elders
- Increased road safety
- Potential development to tourism industry and other industries
- Town development and increase in land value
- Increased connectivity among villages

148. Objective of this activity was to understand the viewpoints of the stakeholders and to respond to their concerns and suggestions during the early stages of the project there by reducing any objections towards the project, incorporate any valuable suggestions by the public in to the design so as to reduce any adverse impacts to the environment.

149. In addition, consultations were held with the Department of Wildlife Conservation (DWLC) and UNESCO representatives in order to obtain their views on roads located near protected areas. DWLC confirmed that there will be no major impacts on the protected areas since the road improvement works will be strictly within the existing ROW. UNESCO Country Office confirmed the project is outside the Sacred City of Kandy.

B. Focus Group Discussions

150. In addition to the one on one interviews, fourteen Focus Group Discussion (FGDs) representing the three districts were carried out from 06.08.2014 to 09.08 2014. The location and number of attendees in each FGD is presented in succeeding Table.

Table 23: A summary of FGDs held for RMC Roads

Date	Location	Male	Female	Total No. of participants
6/8/2014	Walawaththe road	-	5	5
6/8/2014	Manikkawa, Polgahawela	2	4	6
7/8/2014	Herrasagala	9	1	10
7/8/2014	Suduhumpola	5	3	8
7/8/2014	Embulgasdeniya	-	7	7
7/8/2014	Embulgasdeniya	4	3	7
7/8/2014	Mirigama	3	6	9
7/8/2014	Radawadunna	4	7	11

Date	Location	Male	Female	Total No. of participants
8/8/2014	Kulipitiya-South	10	2	12
8/8/2014	Rabukkana	9	3	12
8/8/2014	Kandy	6	3	9
8/8/2014	Katukele	6	7	13
9/8/2014	Mulgampola	6	5	11
9/8/2014	Welata	6	2	8
	TOTAL	**70**	**58**	**128**

151. Key comments and suggestions made during above meetings are listed below. It should be noted that some participants made comments on the RMC roads (even during one on one interviews). These comments are also included in this summary.

Table 24: Summary of key points discussed in FGDs

Location of FGD	Comments made by participants
Heerassagala	• People are willing to provide their labor for the road construction and maintenance purpose • Road side drains and all other existing drainage structures need to be properly investigated and reconstructed where necessary. • A proper drainage study should be carried out to identify locations where drainage improvements are needed. Suggest that the engineers obtain assistance from Grama Niladri Officers. • Increase the number of pedestrian crossings and locate them at strategic points.
Suduhumpala	• Blockage of drainage causes flooding over some road sections. • Increase the number of pedestrian crossings and locate them at strategic points. • Construction works need to be properly monitored. • People are willing to provide their labour for the road construction and maintenance purpose • People are willing to provide food and other necessity for labours working during the road constructions
Kandy	• Propose a pedestrian flyover at Good shed bus stand area • Increase the number of pedestrian crossings and locate them at strategic points. • Construction works need to be properly monitored. • Road side drains and all other existing drainage structures need to be properly investigated and reconstructed where necessary. • All other existing drainage structures need to be properly maintained
Kandy-Katukele	• Proper drainage study should be carried out to identify all locations where drainage needs to be improved. • All other existing drainage structures need to be properly maintained • Improvement of roads in the area will help in the economic development. • This project will ensure the safety of women, children and elderly who uses these roads.

Location of FGD	Comments made by participants
	• People are willing to provide their labour for the road construction and maintenance purpose • Increase the number of pedestrian crossings and locate them at strategic points.
Mulgampola	• Propose a pedestrian flyover at Mulgampola town area • Drainage investigation is important and this should be done with the help of village people or at least with respective Grama Niladari Officers in the area. • Improvement of roads in the area will help in the economic development. • This project will ensure the safety of women, children and elderly who uses these roads. • Convenient transportation helps to develop economic activities in the area.
Welata	• All the existing drainage structures need to be properly maintained • Improvement of roads in the area will help in the economic development. • This project will ensure the safety of women, children and elderly who uses these roads. • People are willing to provide their labour for the road construction and maintenance purpose • Increase the number of pedestrian crossings and locate them at strategic points.
Walawwatte road	• People are willing to provide their labour for the road construction and maintenance purpose • Road side drains and all other existing drainage structures need to be properly investigated and reconstructed where necessary. • A proper drainage study should be carried out to identify locations where drainage improvements are needed. Suggest that the engineers obtain assistance from Grama Niladari Officers. • Increase the number of pedestrian crossings and locate them at strategic points.
Mannikkawa-Polgahawela	• Blockage of drainage causes flooding over some road sections. • Increase the number of pedestrian crossings and locate them at strategic points. • Construction works need to be properly monitored. • People are willing to provide their labour for the road construction and maintenance purpose • People are willing to provide food and other necessity for labours working during the road constructions
Ebulgasdeniya	• Increase the number of pedestrian crossings and locate them at strategic points. • Construction works need to be properly monitored. • Road side drains and all other existing drainage structures need to be properly investigated and reconstructed where necessary. • All other existing drainage structures need to be properly maintained
Ebulgasdeniya	• Proper drainage study should be carried out to identify all

Location of FGD	Comments made by participants
	locations where drainage needs to be improved. • All other existing drainage structures need to be properly maintained • Improvement of roads in the area will help in the economic development. • This project will ensure the safety of women, children and elderly who uses these roads. • People are willing to provide their labour for the road construction and maintenance purpose • Increase the number of pedestrian crossings and locate them at strategic points.
Mirigama	• Drainage investigation is important and this should be done with the help of village people or at least with respective Grama Niladari Officers in the area. • Improvement of roads in the area will help in the economic development. • This project will ensure the safety of women, children and elderly who uses these roads. • Convenient transportation helps to develop economic activities in the area. • Easy transportation for the agricultural products to socio economic centres
Radawaddunna	• People are willing to provide their labour for the road construction and maintenance purpose • Convenient transportation help to economic development of the area • A proper drainage study should be carried out to identify locations where drainage improvements are needed. Suggest that the engineers obtain assistance from Grama Niladari Officers. • Increase the number of pedestrian crossings and locate them at strategic points (Town areas).
Polgahawela, Kuliyapitiya	• Increase the number of pedestrian crossings and locate them at strategic points. • Construction works need to be properly monitored. • People are willing to provide their labour for the road construction and maintenance purpose • People are willing to provide food and other necessity for labours working during the road constructions • Improve the drainage conditions along the road side specially in town areas • This project will ensure the safety of women, children and elderly who uses these roads.

C. Disclosure of information

152. According to the National Environment Act no. 47 and its amendment no. 56, only Prescribed Projects are subjected to specific information disclosure requirements. Since this project is not a prescribed project no information disclosure is required.

153. According to the requirements of the ADB SPS, for environment category B project roads the respective draft IEE will be disclosed before the Management Review Meeting (MRM) or equivalent meeting or approval of the respective project, if there is no MRM. Signboards with project information including details on nature of construction works, road length, construction period, name of contractor, contract sum and contact information for reporting complaints or grievances will be posted in three languages (Sinhala, Tamil and English) for rural roads. For the national (RMC) roads there will be sign boards on period of works and contact information for reporting complaints or grievances in three languages.

154. During project implementation annual environmental monitoring reports will be prepared per province and submitted to ADB for disclosure on the ADB website.

IX. CONCLUSION AND RECOMMENDATIONS

155. This Initial Environmental Examination has discussed various aspects of the proposed rehabilitation and upgrading of 124 kms national roads under RMC package. Contractors are liable to keep the roads in operational status for approximately 7 years under RMC package.

156. As discussed, candidate roads are dispersed over the entire province and few road sections are located near ecologically and hierologically sensitive entities however as the proposed improvement is restricted to the available ROW the impact on such locations will be minimum. In addition DWLC confirmed that there will be no major or irreversible impacts to the protected areas as road upgrading works will not be extended beyond the existing ROW. Therefore this assessment concludes that the project will not cause significant environmental and social problems and the potential adverse impacts are mostly temporary and manageable through the implementation of the proposed mitigation measures stated in the EMP.

157. A standard EMP, EMC and EMOP has been prepared as part of this report. These are required to be updated and converted into contract package specific EMPs, EMCs and EMOPs before the commencement of construction activities.

158. Since a project of this nature involving hundreds of roads is being implemented by RDA, systematic and timely training programs will need to organize to ensure proper compliance of the project to all environmental safeguard requirements.

159. The road network improvement in Central and Sabaragamuwa provinces will boost economic activities in the provinces including potential growth in industries, tourism, and agriculture in lagging rural areas which will be a positive step to the socio economic development of the country.

ANNEX 1.1: ROAD DETAILS OF RMC PACKAGES

Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
1.	Mawenella to Kandy	17.07 km	National	Gangawata Korale	Gatambe	10.9 m	95	Asphalt concrete	Fair/ Good
					Welata				
					Katykele				
					Ihala Katukele				
					Mahanuwara				
					Godagandeniya				
					Pahala Eriyagama				
					Katykele West				
				Yatinuwara	Kotabogoda				
					Pilimathalawa				
					Embilmeegama North				
					Ranawana				
					Kiribathkumbura East				
					Embilmeegama South				
					Kandangama South				
					Bulumulla				
					Pilapitiya				
					Edanduwawa West				
					Kiribathkumbura West				
					Edanduwawa East				
					Uda Eriyagama East				
					Uda Eriyagama West				
					Kadugannawa Town				
					Ilukwatta				
					Urapola				
					Madarangoda				
					Ihala Mudaliwatta				
					Kadawathgama				
					Kendakaduwa				

Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
2	Katugastota to Galagedara	16.34 km	National	Thumpane	Marawanagoda	12.8 m	85	Asphalt concert	Good
					Adungama Palkumbura				
					Haddapitiya				
					Palukopiwatta				
					Nikathenna				
					Udapitiya				
					Kandekumbura				
					Bonakot				
					Galagedara				
					Galagedara West				
					Ethamulla				
					Niyangoda				
					Damunugasthenna				
				Harispaththuwa	Uyanwatta				
					Hedeniya				
					Nugawela				
					Kurunduwatta				
					Rajasinhagama				
					Viguhumpola				
					Arambegama				
					Aladeniya				
					Thittapajjala				
					Hiriyalagammana				
					Etamurungsgods				
					Yatiwawala				
					Katugasthota				
					Wathuwala				
					Senarathgama South				
				Gangawata Korale	Senarathgama North				
					Kondadeniya				
					Senkadagala				

Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
3.	Galagedara to Kurunegala	21.78 km	National	Kurunegala	Kurunegala Town - Bazaar	12.7 m	86	Asphalt concrete	Good
					Kurunegala Town Udawalpola				
					Gettuwana				
					Theliyagonna				
				Mallawapitiya	Hewapola				
					Millawa				
					Mehiella South				
					Mallawapitiya				
				Mawathagama	Kotikapola				
					Pahamuddana				
					Mawathagama South				
					Samodagama				
					Mawathagama North				
					Madawa				
					Henepola				
					Maralanda				
					Rathnetggama				
					Mee/Pallegama East				
					Mawathagama West				
					Mawathagama				
					Ilukwela North				
					Kotikapola Ihalagama				
					Ilukwela South				
					Delpaddana				
					Paragahadeniya				
					Hettipola				
					Bandaragalawatta				
					Wadiyagoda				
					Boyagoda				
					Udakottamulla				
					Metibokka				

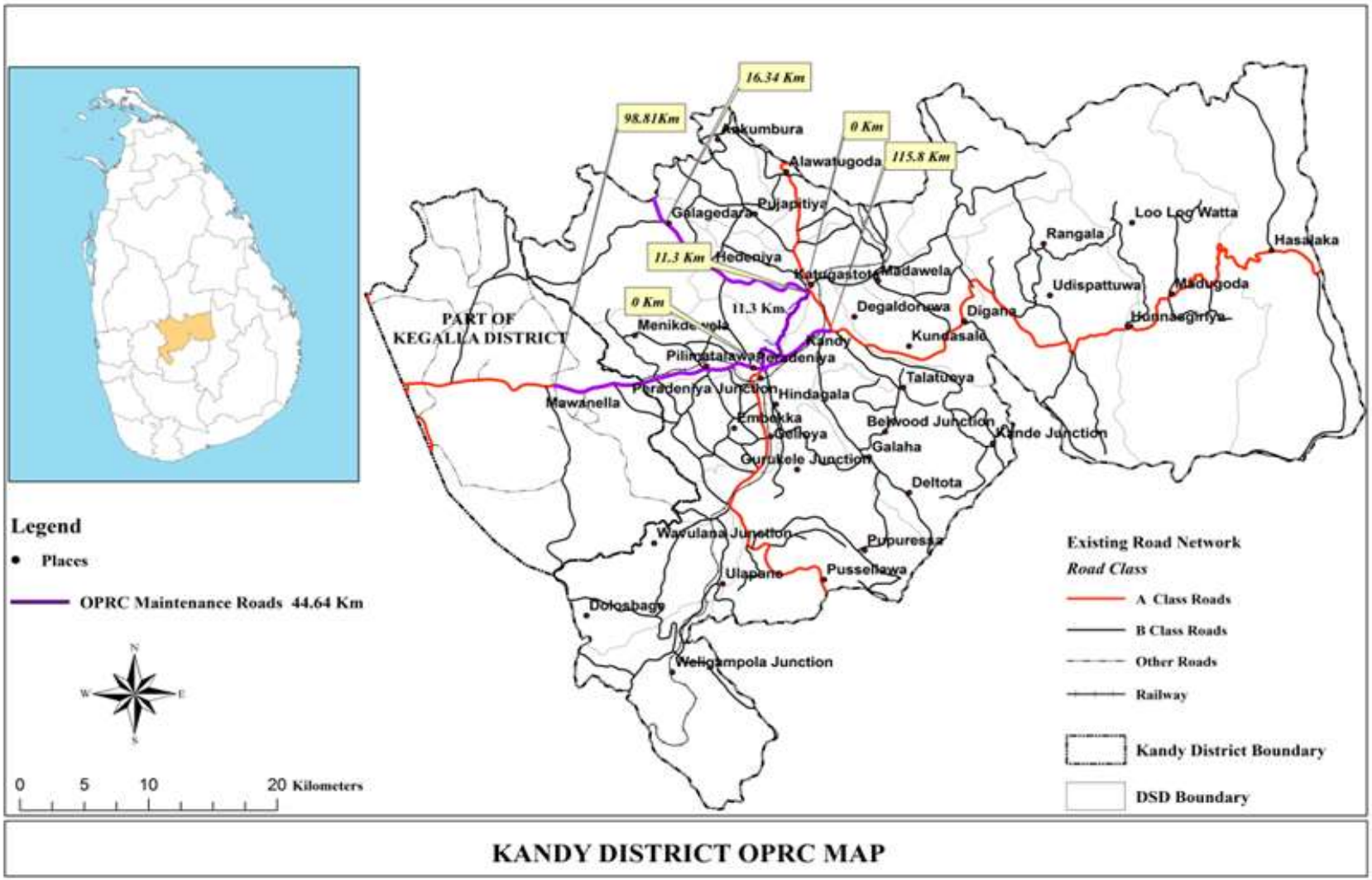
Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
					Pilessa Ihalagama				
					Pilessa Pahalagama				
				Poojapitiya	Pathirada				
				Thumpane	Damunugasthenna				
					Akkarawatta				
4.	Peradeniya-Hallouwa-Katugastota	9.985 km	National	Harispattuwa	Pallemulla	9.2 m	51	Asphalt concrete	Good
					Madapathagama				
					Kumburegedara				
					Gohagoda				
					Udamulla				
					Haloluwa				
					Wegiriya				
					Polwatta				
					Waratenna				
				Yatinuwara	Gannoruwa East				
					Kendakaduwa				
				Gangawata Korale	Senkadagala				

Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
1	Nittabuwa to Warakapola	15.97 km	National	Mirigama	Newgala		66	Asphalt concrete	Fair/good
					Madabavita Ihalagama				
					Danovita				
					Madabavita				
					Kotadeniya				
					Weweldeniya Ihalagama				
					Weweldeniya Ihalagama West				
					Weweldeniya Pahalagama				
					Bataleeya				
					Makkanigoda North				
					Pasyala East				
					Pasyala West				
					Hedidenikanda-Radawadunna				
					Imbulgasovita				
					Radawadunna				
					Bataleeya South				
					Muruthawela				
					Radawadunna Central				
					Pasyala				
					Weerasooriyakanda				
				Warakapola	Dummaladeniya				
					Penihela				
				Attanagala	Napagoda				
					Nawagamuwa				
					Wedagama				
					Nambadaluwa West				
					Horagollagama				
					Nittambuwa North				
					Nittambuwa South				
					Nambabaluwa East				
					Kalalpitiya				
2.	Warakapola to Mawenella	43.13 km	National	Warakapola	Mahena Colony		224	Asphalt concrete	Fair/good
					Warakapola				
					Mahena				
					Tholangamuwa				
					Nelumdeniya				
					Nape				
					Morawaka				

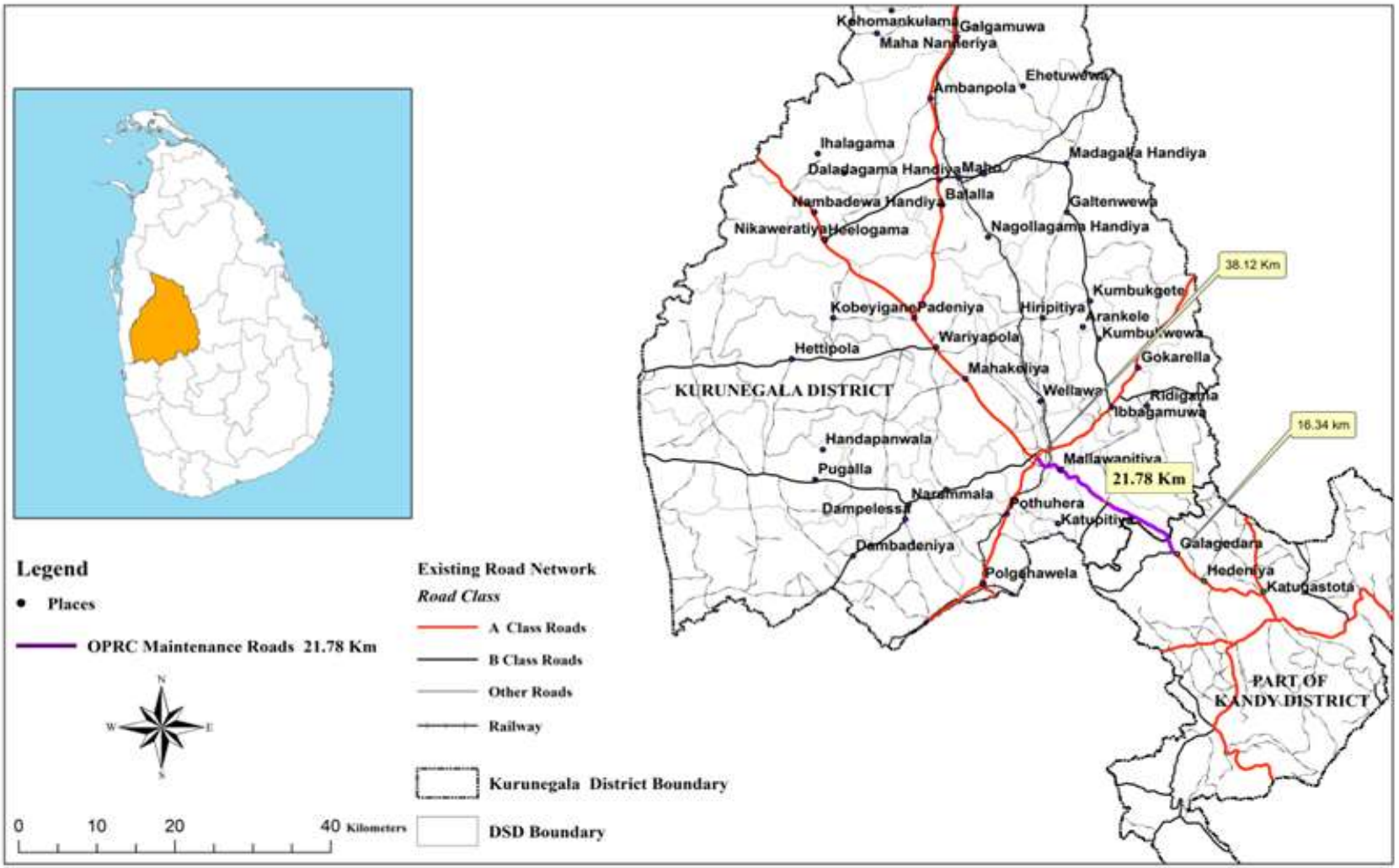
Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
					Gasnawa				
					Mampita				
					Ambepussa				
					Dummaladeniya				
				Galigamuwa	Palapoluwa				
					Ballapana Udabage				
					Mayfield				
					Yattogoda				
					Ballapana Pathbage				
					Kobbewela				
					Waragoda				
					Mangalagama				
					Galigamuwa				
					Bisowela				
				Rambukkana	Molagoda				
					Kumbaldeewela				
				Kegalle	Uda Karandupotha				
					Ranwala				
					Karandupotha				
					Puwakdeniya				
					Kegalle Town				
					Meepitiya				
					Golahela				
					Emunugalla				
					Ambanpitiya				
					Paranagampola				
				Mawenella	Habbunkaduwa				
					Uthuwankanda				
					Beligammana				
					Ambulugala				
					Mawela				
					Ganethenna				
					Mawanella				
					Dehimaduwa				
					Hinguloya				
					Rankothdiwala				
					Mawana				
					Warakapana				
					Owatta				
					Hingula				

Road ID	Road Name	Length (Km)	Road Category	DSD	GNS	Present width	No of Culverts and Bridges	Surface type	Road condition
					Molligoda				
					Batawala				
3.	Polgahawela to Ranwela road	11.32 km	National	Polgahawela	Serapees Watta		57	Asphalt concrete	Fair/good
					Oruliyadda				
					Weligodapitiya				
					Galbadagama				
					Polgahawela North				
				Galigamuwa	Dewalegama				
					Edurapotha West				
					Walagama				
					Edurapotha East				
					Godapola				
				Rambukkana	Kehelwatugoda				
					Imbulgasdeniya				
				Kegalle	Paranagampola				

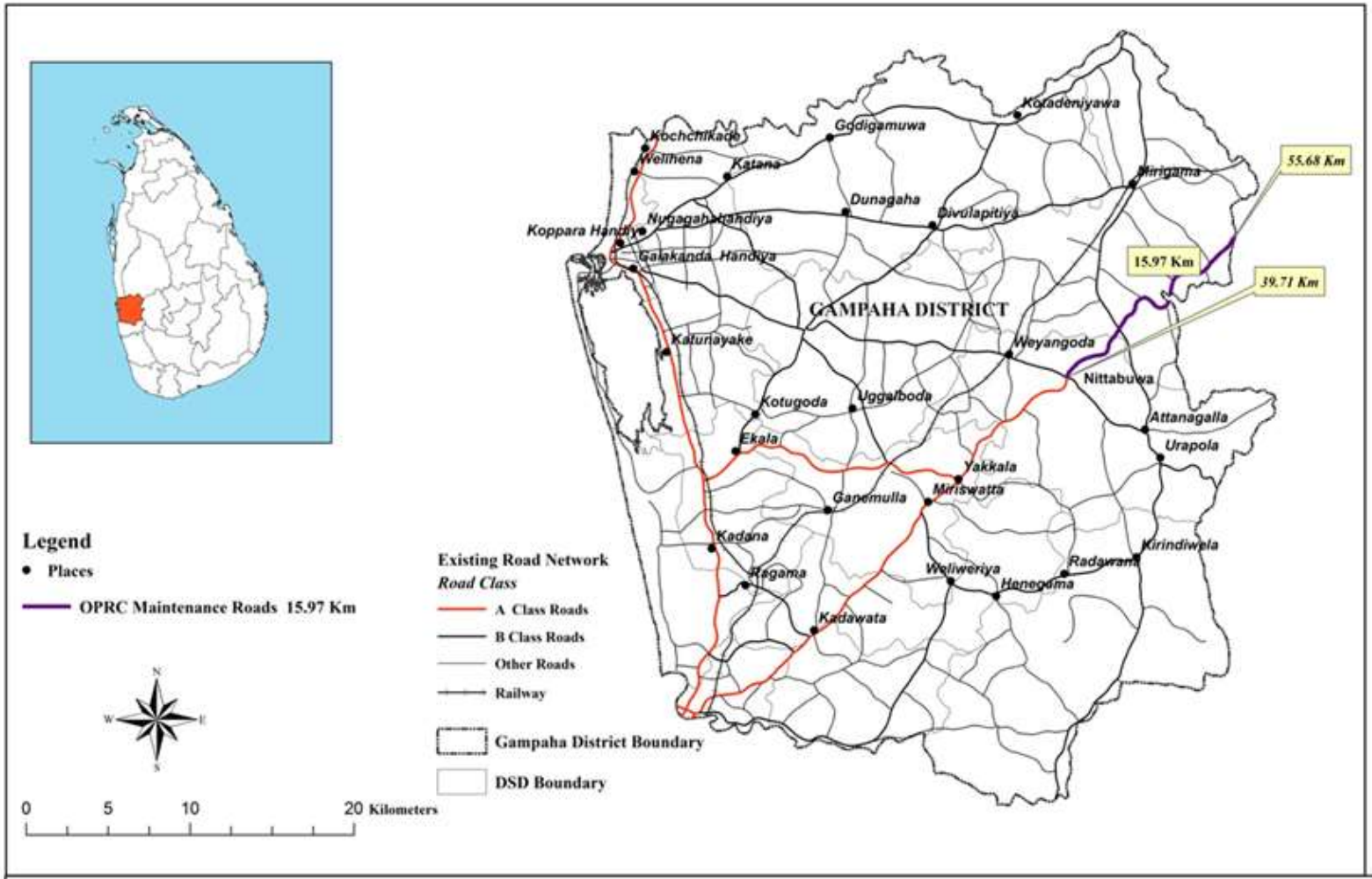
ANNEX 2.1: DISTRICT RMC MAPS



KANDY DISTRICT OPRC MAP



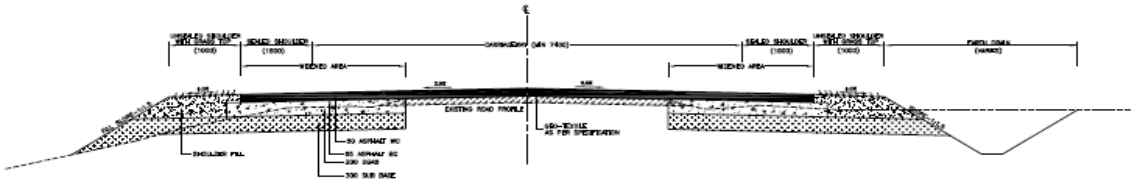
KURUNEGALA DISTRICT OPRC MAP



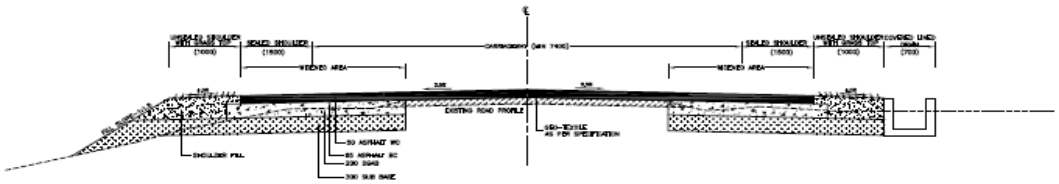
GAMPAHA DISTRICT OPRC MAP

ANNEX 2.2: ROAD SECTIONS

A–001 COLOMBO – KANDY ROAD
(From Ch.039+700 to Ch.115+900)



TS–A (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – RURAL AREAS)



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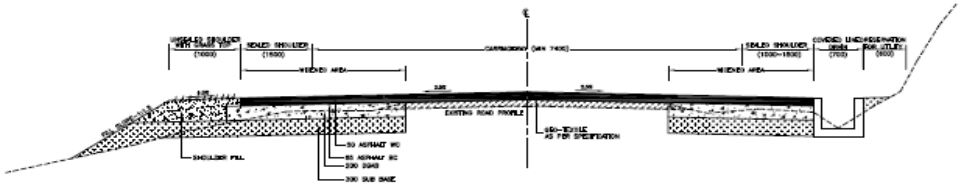


TS–C (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – HILLY AREAS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. USE GEOSYNTHETIC MARTIAL ON CRACKED EXISTING SURFACE AS SPECIFIED IN THE SPECIFICATION AND ENGINEER'S GUIDANCE.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE)
SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No. | REVISION | DATE

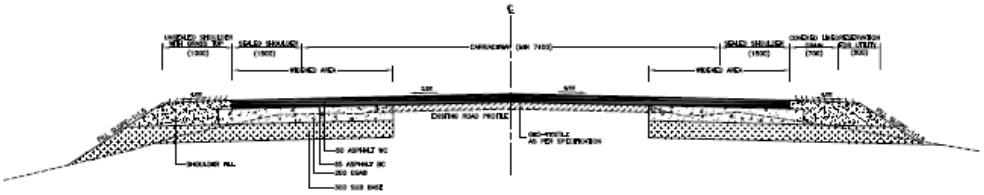
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
A–001 COLOMBO – KANDY ROAD
(From Ch.39+700 to Ch.115+900)

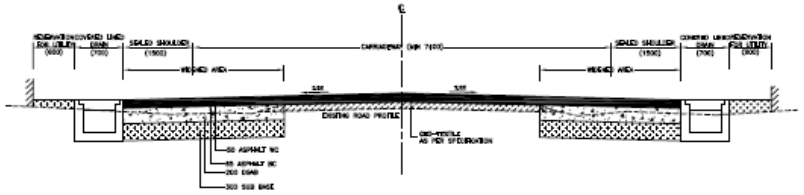
DWG. No. TS–A001–01

DES: | DRW: | CHK: | DATE: 22–08–2014

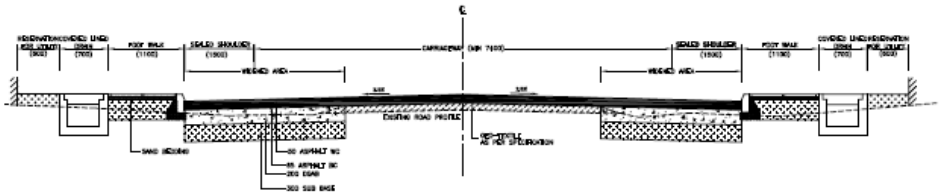
A–001 COLOMBO – KANDY ROAD
(From Ch.039+700 to Ch.115+900)



TS–D (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – EMBANKMENT AREAS)



TS–E (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – URBAN AREAS – WITHOUT FOOT WALKS)



TS–F (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – URBAN AREAS – WITH FOOT WALKS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. USE GEOSYNTHETIC MARTIAL ON CRACKED EXISTING SURFACE AS SPECIFIED IN THE SPECIFICATION AND ENGINEER'S GUIDANCE.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

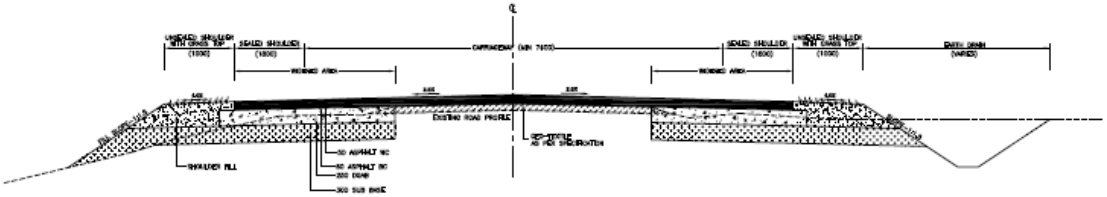
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
A–001 COLOMBO – KANDY ROAD
(From Ch.39+700 to Ch.115+900)

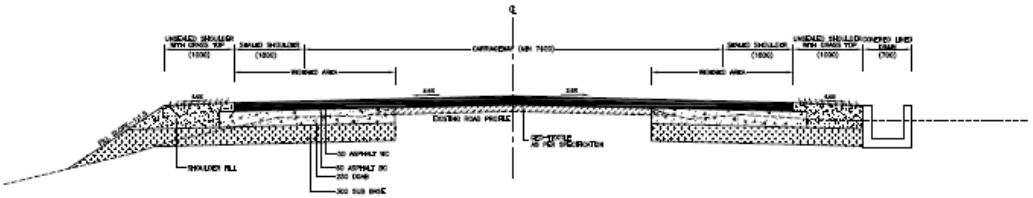
DWG. No. TS–A001–02

DES:		
DRW:		
CHK:		
DATE	22–08–2014	

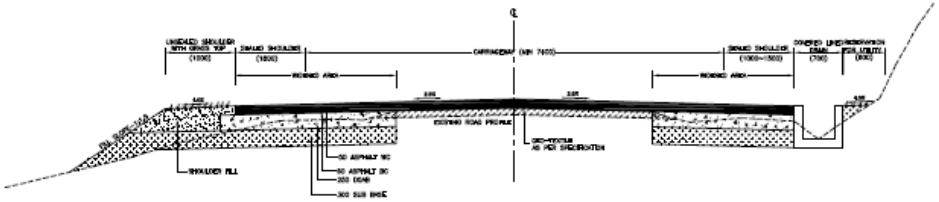
A–010 FROM KATUGASTHOTA – KURUNEGALA – PUTTALAM ROAD
(From Ch.000+000 to Ch.038+130)



TS–A (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – RURAL AREAS)



TS–B (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – SEMI RURAL AREAS)



TS–C (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – HILLY AREAS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. USE GEOSYNTHETIC MARTIAL ON CRACKED EXISTING SURFACE AS SPECIFIED IN THE SPECIFICATION AND ENGINEER'S GUIDANCE.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No. | REVISION | DATE

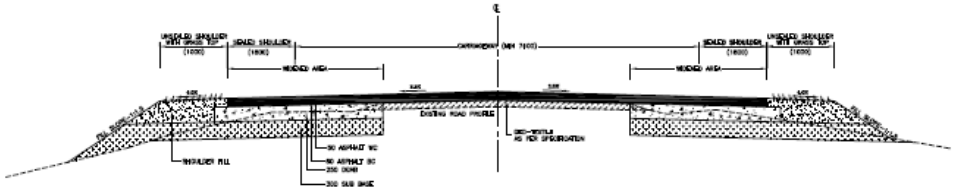
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
KATUGASTHOTA–KURUNEGALA–PUTTALAM ROAD(A010)
(From Ch.000+000 to Ch.38+130)

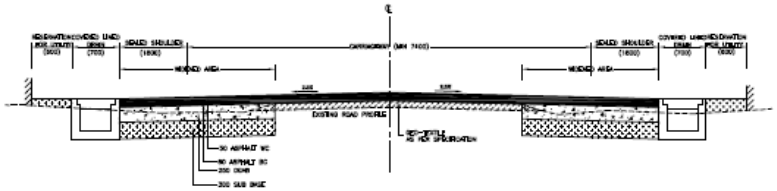
DWG. No. TS–A010–01

DES: | DRW: | CHK: | DATE: 22–08–2014

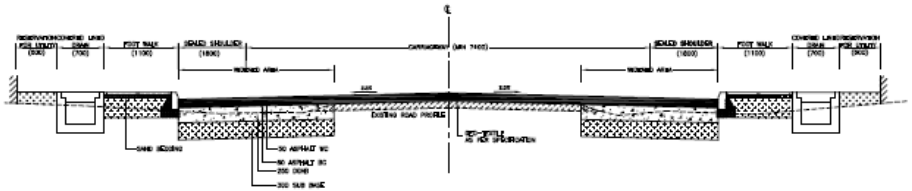
A–010 FROM KATUGASTHOTA – KURUNEGALA – PUTTALAM ROAD
(From Ch.000+000 to Ch.038+130)



TS–D (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – EMBANKMENT AREAS)



TS–E (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – URBAN AREAS – WITHOUT FOOT WALKS)



TS–F (TYPICAL SECTION FOR ROAD OVERLAY & WIDENING – URBAN AREAS – WITH FOOT WALKS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
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8. USE GEOSYNTHETIC MARTIAL ON CRACKED EXISTING SURFACE AS SPECIFIED IN THE SPECIFICATION AND ENGINEER'S GUIDANCE.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE)
SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

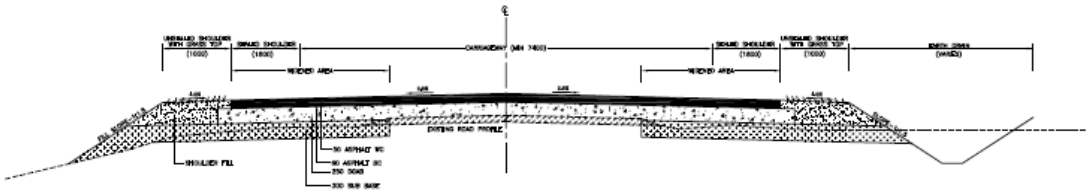
DRAWING TITLE: TYPICAL CROSS SECTION
KATUGASTHOTA–KURUNEGALA–PUTTALAM ROAD(A010)
(From Ch.000+000 to Ch.38+130)

DWG. No. TS–A010–02

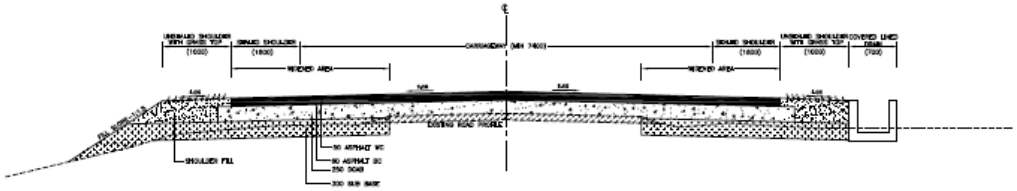
DES.
DRW.
CHK.
DATE 22–08–2014

No. REVISION DATE

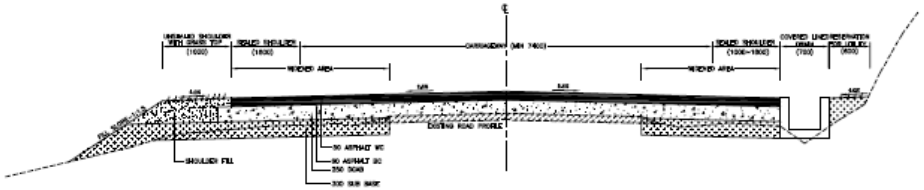
A–010 FROM KATUGASTHOTA – KURUNEGALA – PUTTALAM ROAD
(From Ch.000+000 to Ch.038+130)



TS–G (TYPICAL SECTION FOR ROAD RECONSTRUCTION – RURAL AREAS)



TS–H (TYPICAL SECTION FOR ROAD RECONSTRUCTION – SEMI RURAL AREAS)



TS–I (TYPICAL SECTION FOR ROAD RECONSTRUCTION – HILLY AREAS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
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8. MINIMUM THICKNESS OF DGAB SHOULD BE 200 TOP OF THE EXISTING PAVEMENT.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

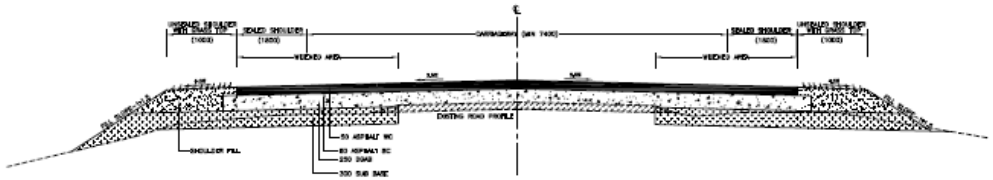
DRAWING TITLE: TYPICAL CROSS SECTION
KATUGASTHOTA–KURUNEGALA–PUTTALAM ROAD(A010)
(From Ch.000+000 to Ch.38+130)

DWG. No. TS–A010–03

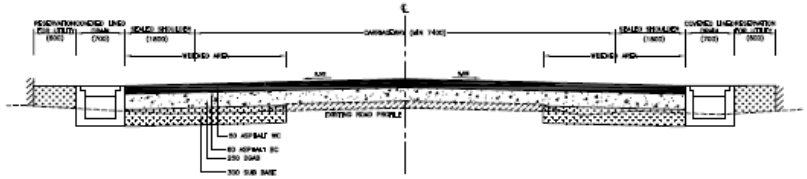
DES.
DRW.
CHK.
DATE 22–08–2014

No. REVISION DATE

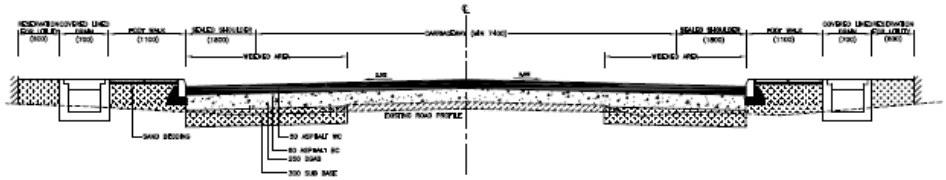
A–010 FROM KATUGASTHOTA – KURUNEGALA – PUTTALAM ROAD
(From Ch.000+000 to Ch.038+130)



TS–J (TYPICAL SECTION FOR ROAD RECONSTRUCTION – EMBANKMENT AREAS)



TS–K (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITHOUT FOOT WALKS)



TS–L (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITH FOOT WALKS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
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9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

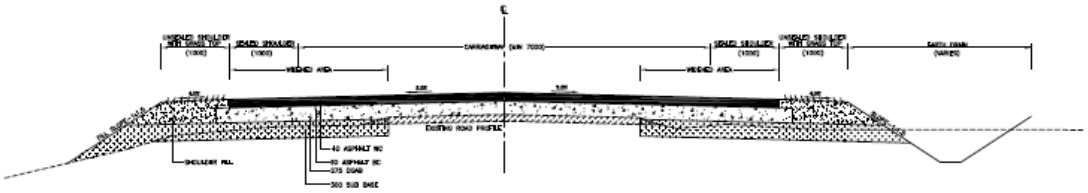
DRAWING TITLE: TYPICAL CROSS SECTION
KATUGASTHOTA–KURUNEGALA–PUTTALAM ROAD(A010)
(From Ch.000+000 to Ch.38+130)

DWG. No. TS–A010–04

DES:
DRW:
CHK:
DATE: 22–08–2014

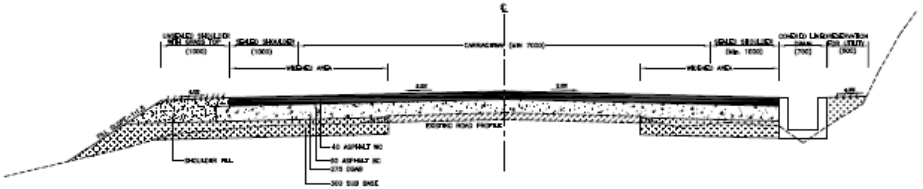
A–019 KEGALLE – POLGAHAWELA ROAD

(From Ch.00+000 to Ch.6+000)



TS–A (TYPICAL SECTION FOR ROAD RECONSTRUCTION – RURAL AREAS)
(From Ch.00+000 to Ch.6+000)

TS–B (TYPICAL SECTION FOR ROAD RECONSTRUCTION – SEMI RURAL AREAS)
(From Ch.00+000 to Ch.6+000)



TS–C (TYPICAL SECTION FOR ROAD RECONSTRUCTION – HILLY AREAS)
(From Ch.00+000 to Ch.6+000)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

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7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. MINIMUM THICKNESS OF DGAB SHOULD BE 200 TOP OF THE EXISTING PAVEMENT.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

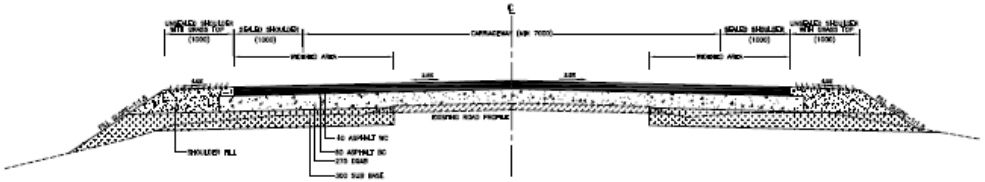
DRAWING TITLE: TYPICAL CROSS SECTION
KEGALLE–POLGAHAWELA ROAD (A–019)
(From Ch.0+000 to Ch.6+000)

DWG. No. TS–A019–01

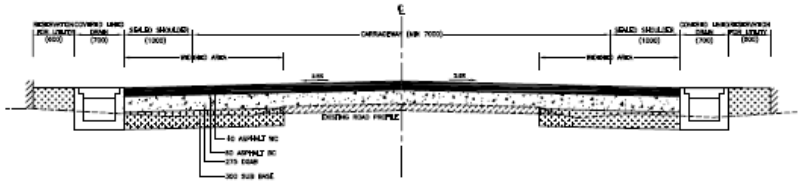
DES.	
DRW.	
CHK.	
DATE	22–08–2014

A–019 KEGALLE – POLGAHAWELA ROAD

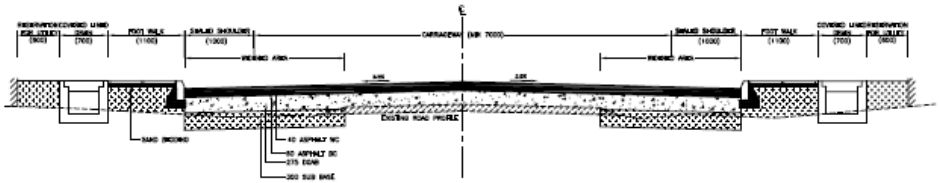
(From Ch.00+000 to Ch.6+000)



TS–D (TYPICAL SECTION FOR ROAD RECONSTRUCTION – EMBANKMENT AREAS)
(From Ch.00+000 to Ch.6+000)



TS–E (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITHOUT FOOT WALKS)
(From Ch.00+000 to Ch.6+000)



TS–F (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITH FOOT WALKS)
(From Ch.00+000 to Ch.6+000)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

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ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
KEGALLE–POLGAHAWELA ROAD (A–019)
(From Ch.0+000 to Ch.6+000)

DWG. No. TS–A019–02

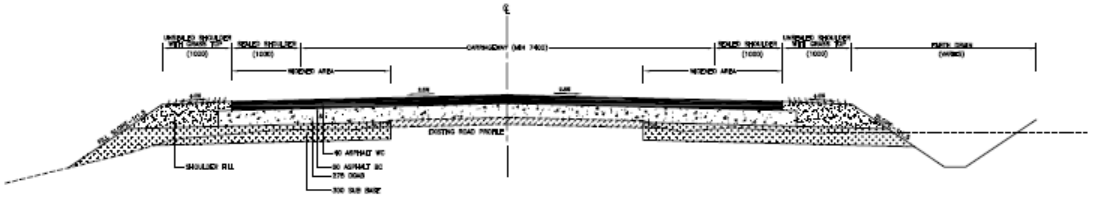
DES: DRW: CHK:

DATE: 22–08–2014

No. REVISION DATE

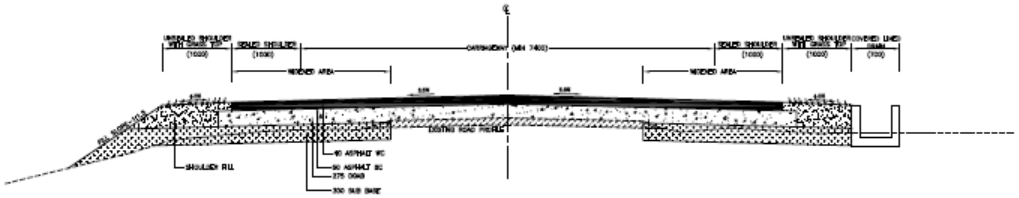
A–019 KEGALLE – POLGAHAWELA ROAD

(From Ch.06+000 to Ch.11+820)



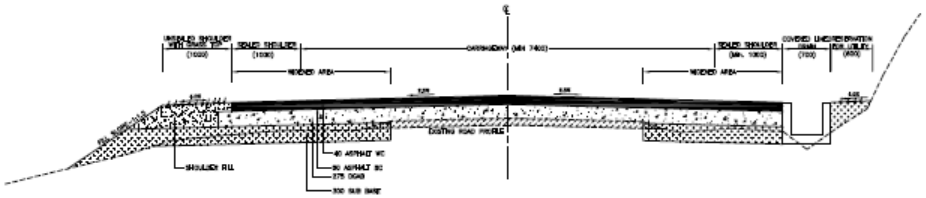
TS–G (TYPICAL SECTION FOR ROAD RECONSTRUCTION – RURAL AREAS)

(From Ch.06+000 to Ch.11+820)



TS–H (TYPICAL SECTION FOR ROAD RECONSTRUCTION – SEMI RURAL AREAS)

(From Ch.06+000 to Ch.11+820)



TS–I (TYPICAL SECTION FOR ROAD RECONSTRUCTION – HILLY AREAS)

(From Ch.06+000 to Ch.11+820)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

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9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

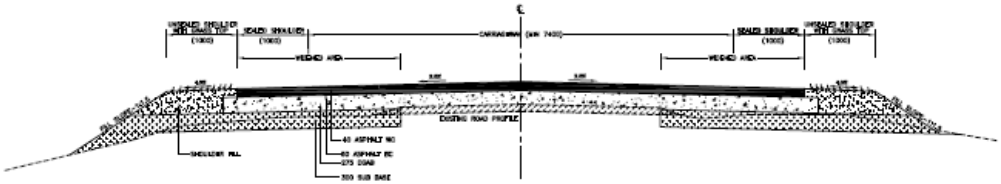
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
KEGALLE–POLGAHAWELA ROAD (A–019)
(From Ch.6+000 to Ch.11+820)

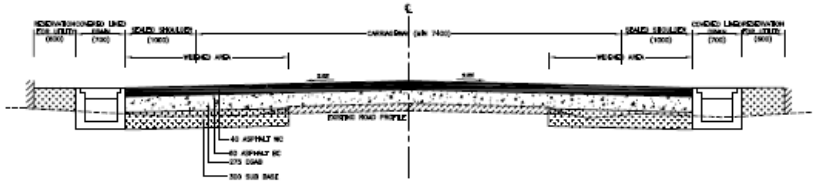
DWG. No. TS–A019–03

DES:	
DRW:	
CHK:	
DATE:	22–08–2014

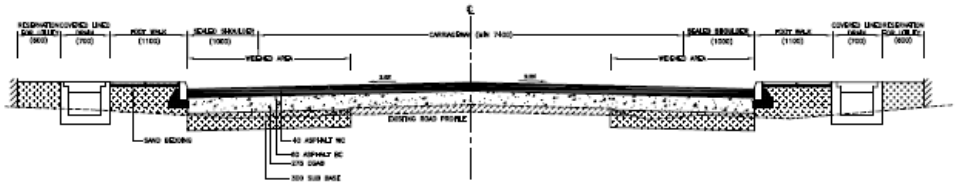
A–019 KEGALLE – POLGAHAWELA ROAD
(From Ch.06+000 to Ch.11+820)



TS–J (TYPICAL SECTION FOR ROAD RECONSTRUCTION – EMBANKMENT AREAS)
(From Ch.06+000 to Ch.11+820)



TS–K (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITHOUT FOOT WALKS)
(From Ch.06+000 to Ch.11+820)



TS–L (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITH FOOT WALKS)
(From Ch.06+000 to Ch.11+820)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. MINIMUM THICKNESS OF DGAB SHOULD BE 200 TOP OF THE EXISTING PAVEMENT.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

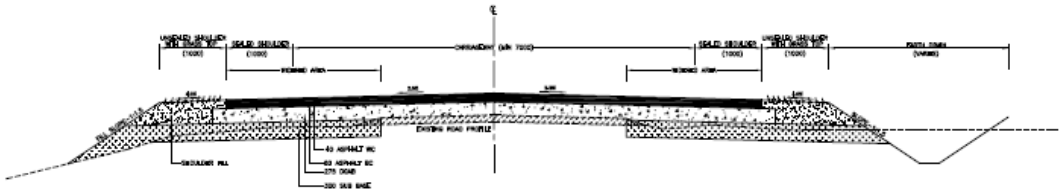
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
KEGALLE–POLGAHAWELA ROAD (A–019)
(From Ch.6+000 to Ch.11+820)

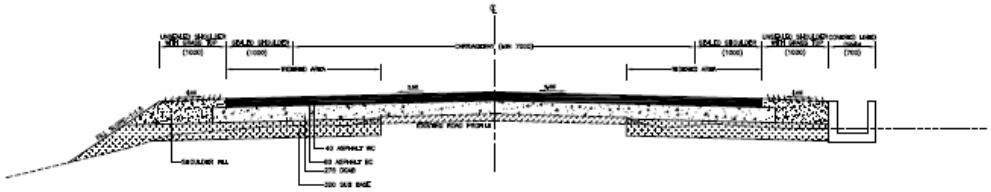
DWG. No. TS–A019–04

DES.	
DRW.	
CHK.	
DATE	22–08–2014

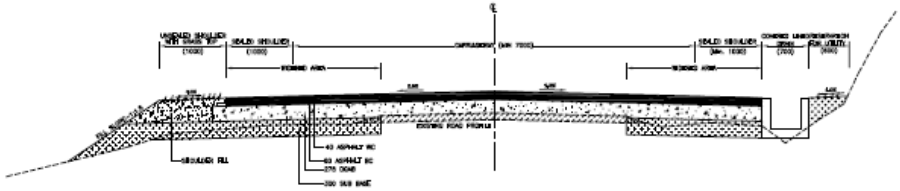
B–365 PERADENIYA – HALOLUWA – KATUGASTHOTA ROAD
(From Ch.00+000 to Ch.9+990)



TS–A (TYPICAL SECTION FOR ROAD RECONSTRUCTION – RURAL AREAS)



TS–B (TYPICAL SECTION FOR ROAD RECONSTRUCTION – SEMI RURAL AREAS)



TS–C (TYPICAL SECTION FOR ROAD RECONSTRUCTION – HILLY AREAS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. MINIMUM THICKNESS OF DGAB SHOULD BE 200 TOP OF THE EXISTING PAVEMENT.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No. | REVISION | DATE

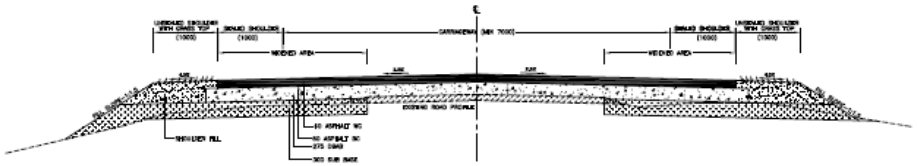
CONSULTANT: KATAHIRA & ENGINEERS INTERNATIONAL in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
PERADENIYA–HALOLUWA–KATUGASTHOTA ROAD(A365)
(From Ch.0+000 to Ch.9+990)

DWG. No. TS–B365–01

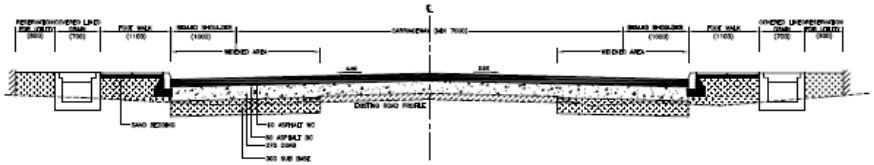
DES. | DRW. | CHK. | DATE: 22–08–2014

B–365 PERADENIYA – HALOLUWA – KATUGASTHOTA ROAD
(From Ch.00+000 to Ch.9+990)



TS–D (TYPICAL SECTION FOR ROAD RECONSTRUCTION – EMBANKMENT AREAS)

TS–E (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITHOUT FOOT WALKS)



TS–F (TYPICAL SECTION FOR ROAD RECONSTRUCTION – URBAN AREAS – WITH FOOT WALKS)

LEGEND:

	ASPHALT WEARING COURSE	WC
	DENSE GRANULAR AGGREGATE BASE	DGAB
	GRANULAR SUB BASE (CBR>30%)	GS
	GRANULAR CAPPING (CBR>10%)	GC
	SHOULDER FILL	
	50mm BEDDING SAND	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED).
2. THIS DRAWING PROVIDES A GUIDANCE ONLY. EXACT DETAILS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. SELECT DRAINS AS PER SITE CONDITION FOR DRAIN DETAILS REFER DRAWING NO. DS–01
4. FOR TOE/RETAINING WALL DETAILS REFER DRAWING NO. S–05
5. IF THE SPECIFIED MINIMUM DIMENSIONS SHOWN IN THE DRAWING CAN NOT BE MAINTAINED DUE TO ROW RESTRICTIONS THE DIMENSIONS CAN BE REDUCED SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. INTERFACING DETAILS WITH ADJACENT BUILDINGS/LANDS SHOULD BE DECIDED ACCORDING TO THE SITE CONDITIONS.
7. BENCHING SHALL BE PROVIDED FOR THE CUT AND FILL AS PER REQUIREMENT OF SIDE CONDITIONS AND ENGINEER'S GUIDANCE.
8. MINIMUM THICKNESS OF DGAB SHOULD BE 200 TOP OF THE EXISTING PAVEMENT.
9. ISOLATED BASE FAILURE SECTION SHOULD BE RECTIFIED PRIOR TO EXISTING PAVEMENT STRENGTHENING.

ADB FUNDED i ROAD PROJECT (OPRC PACKAGE) SABARAGAMUWA & CENTRAL PROVINCE

CLIENT: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF PORTS & HIGHWAYS
Road Development Authority

No.	REVISION	DATE

CONSULTANT: KEC International in Association with ENGINEERING CONSULTANTS LTD. and BANGLADESH CONSULTANTS LTD.

DRAWING TITLE: TYPICAL CROSS SECTION
PERADENIYA–HALOLUWA–KATUGASTHOTA ROAD(A365)
(From Ch.0+000 to Ch.9+990)

DES.	
DRW.	
CHK.	
DWG. No.	TS–B365–02
DATE	22–08–2014

ANNEX 2.3: MATERIAL REQUIREMENTS FOR RMC ROAD

ROAD NAME : Katugastota - Kurunegala - Puttlam Road -(38.13Km)

ITEM		DESCRIPTION	UNIT	Qty for each Province	
Bill	Pay			Central	North Central
1		Aggregate base, dense graded (37.5 mm)	Cu.m	49,000.00	5,600.00
2		Aggregate, 20 mm	Cu.m	40.00	60.00
3		Asphalt concrete, cold mix	MT	30.00	35.00
4		Asphalt concrete, Hot mix	MT	69,607.00	93,707.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	190,614.40	249,385.00
6		Bitumen prime coat, cutback MC 30	ltr	207,610.00	273,390.00
7		Bitumen, straight run, 60/70 penetration	ltr	600.00	400.00
8		Cement, ordinary Portland	t	8.00	12.00
9		Concrete pipe, reinforced 600 mm diameter	lm	158.60	214.72
10		Concrete pipe, reinforced 900 mm diameter	lm	39.04	51.24
11		Concrete pipe, reinforced 1200 mm diameter	lm	31.72	39.04
12		Concrete, Grade C 15	Cu.m	320.00	312.00
13		Concrete, Grade C 20	Cu.m	260.00	170.00
14		Concrete, Grade C 25	Cu.m	1,140.00	1,130.00
15		Concrete, Grade C 30	Cu.m	35.00	25.00
16		Formwork, timber (smooth)	sq.m	5,350.00	5,250.00
17		Formwork, timber (Rough)	sq.m	4,285.00	4,185.00
18		Pipe, PVC, 90 mm diameter (Type 600)	lm	45.00	30.00
19		Reinforcement, high-yield steel, Grade 460/425	kg	41,400.00	40,200.00
20		Reinforcement, mild steel, Grade 250	kg	200.00	200.00
21		Rubble, 100 - 150 mm	Cu.m	225.00	95.00
22		Rubble, 150- 225 mm	Cu.m	1,550.00	770.00
23		River Sand	Cu.m	870.00	1,160.00
24		Precast concreat paving slabs 450*450*mm	Nos	8,300.00	14,000.00
25		Paint enamel	ltr	50.00	80.00

ROAD NAME : Colombo-Kandy -(76.17Km)

ITEM		DESCRIPTION	UNIT	Qty for each Province	
Bill	Pay			Sabaragamuwa	Central
1		Aggregate base, dense graded (37.5 mm)	Cu.m	11,076.00	3,124.00
2		Aggregate, 20 mm	Cu.m	106.36	30.00
3		Asphalt concrete, cold mix	t	53.18	15.00
4		Asphalt concrete, Hot mix	t	227,260.00	65,640.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	745.03	210.14
6		Bitumen prime coat, cutback MC 30	ltr	62,736.46	17,694.90
7		Bitumen, straight run, 60/70 penetration	ltr	3,323.86	937.50
8		Block cement 400*200*100 mm	nr	48,750.00	13,750.00
9		Cement, ordinary Portland	t	15.95	4.50
10		Concrete pipe, reinforced 600 mm diameter	lm	106.36	30.00
11		Concrete pipe, reinforced 900 mm diameter	lm	26.59	7.50
12		Concrete pipe, reinforced 1200 mm diameter	lm	15.95	4.50
13		Concrete, Grade C 15	Cu.m	6,268.22	1,767.96
14		Concrete, Grade C 20	Cu.m	53.18	15.00
15		Concrete, Grade C 25	Cu.m	11,753.18	3,315.00
16		Concrete, Grade C 30	Cu.m	26.59	7.50
17		Formwork, timber (smooth)	sq.m	18,879.55	5,325.00
18		Formwork, timber (rough)	sq.m	1,000.00	260.00
19		Pipe, PVC, 90 mm diameter (Type 600)	lm	69.14	19.50
20		Reinforcement, high-yield steel, Grade 460/425	kg	390,664.77	110,187.50
21		Reinforcement, mild steel, Grade 250	kg	531.82	150.00
22		Rubble, 100 - 150 mm	Cu.m	132.95	37.50
23		Rubble, 150- 225 mm	Cu.m	255.27	72.00

24		River Sand	Cu.m	425.45	120.00
25		Paint, enamel	ltr	89.70	25.30

ROAD NAME- Peradeniya Hallooluwa Road & Polgahawela - Kegalle Road

ITEM		DESCRIPTION	UNIT	Peradeniya-Halloluwa-Kadugastotta Road	Polgahawela-Kegalle Road	
Bill	Pay			Central	Sabaragamuwa	North Western
1		Aggregate base, dense graded (37.5 mm)	Cu.m	5,845.00	24,244.00	6,061.00
2		Aggregate, 20 mm	Cu.m	167.00	182.40	45.60
3		Asphalt concrete, cold mix	t	10.00	8.00	2.00
4		Asphalt concrete, Hot mix	t	22,150.00	21,104.00	5,276.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	27,573.00	26,376.00	6,594.00
6		Bitumen prime coat, cutback MC 30	ltr	21,595.00	41,220.00	10,305.00
7		Bitumen, straight run, 60/70 penetration	ltr	625.00	500.00	125.00
8		Cement, ordinary Portland	t	3.00	2.40	0.60
9		Concrete pipe, reinforced 600 mm diameter	lm	84.00	59.20	14.80
10		Concrete pipe, reinforced 900 mm diameter	lm	28.00	14.40	3.60
11		Concrete pipe, reinforced 1200 mm diameter	lm	13.00	18.40	4.60
12		Concrete, Grade C 15	Cu.m	108.00	102.40	25.60
13		Concrete, Grade C 20	Cu.m	1,175.00	585.60	146.40
14		Concrete, Grade C 25	Cu.m	70.00	212.80	53.20
15		Concrete, Grade C 30	Cu.m	5.00	4.00	1.00
16		Formwork, timber (smooth)	sq.m	3,990.00	3,024.00	756.00
17		Formwork, timber (Rough)	sq.m	3,925.00	4,028.00	1,007.00
18		Pipe, PVC, 90 mm diameter (Type 600)	lm	470.00	148.00	37.00
19		Reinforcement, high-yield steel, Grade 460/425	kg	47,125.00	96,900.00	24,225.00
20		Reinforcement, mild steel, Grade 250	kg	2,200.00	1,520.00	380.00
21		Rubble, 100 - 150 mm	Cu.m	25.00	20.00	5.00
22		Rubble, 150- 225 mm	Cu.m	248.00	218.40	54.60
23		River Sand	Cu.m	25.00	20.00	5.00
24		Precast concreat paving slabs 450*450*mm	Nos	2,717.00	11,852.00	2,963.00
25		Paint, emulsion	ltr	33.00	26.40	6.60
26		Paint, enamel	ltr	18.00	14.40	3.60

ROAD NAME : Katugastota - Kurunegala - Puttlam Road -(38.13Km)

ITEM		DESCRIPTION	UNIT	Qty for each Province	
Bill	Pay			Central	North Central
1		Aggregate base, dense graded (37.5 mm)	Cu.m	49,000.00	5,600.00
2		Aggregate, 20 mm	Cu.m	40.00	60.00
3		Asphalt concrete, cold mix	MT	30.00	35.00
4		Asphalt concrete, Hot mix	MT	69,607.00	93,707.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	190,614.40	249,385.00
6		Bitumen prime coat, cutback MC 30	ltr	207,610.00	273,390.00
7		Bitumen, straight run, 60/70 penetration	ltr	600.00	400.00
8		Cement, ordinary Portland	t	8.00	12.00
9		Concrete pipe, reinforced 600 mm diameter	lm	158.60	214.72
10		Concrete pipe, reinforced 900 mm diameter	lm	39.04	51.24
11		Concrete pipe, reinforced 1200 mm diameter	lm	31.72	39.04
12		Concrete, Grade C 15	Cu.m	320.00	312.00
13		Concrete, Grade C 20	Cu.m	260.00	170.00
14		Concrete, Grade C 25	Cu.m	1,140.00	1,130.00
15		Concrete, Grade C 30	Cu.m	35.00	25.00
16		Formwork, timber (smooth)	sq.m	5,350.00	5,250.00
17		Formwork, timber (Rough)	sq.m	4,285.00	4,185.00
18		Pipe, PVC, 90 mm diameter (Type 600)	lm	45.00	30.00
19		Reinforcement, high-yield steel, Grade 460/425	kg	41,400.00	40,200.00

20		Reinforcement, mild steel, Grade 250	kg	200.00	200.00
21		Rubble, 100 - 150 mm	Cu.m	225.00	95.00
22		Rubble, 150- 225 mm	Cu.m	1,550.00	770.00
23		River Sand	Cu.m	870.00	1,160.00
24		Precast concreat paving slabs 450*450*mm	Nos	8,300.00	14,000.00
25		Paint enamel	ltr	50.00	80.00

ROAD NAME : Colombo-Kandy -(76.17Km)

ITEM		DESCRIPTION	UNIT	Qty for each Province	
Bill	Pay			Sabaragamuwa	Central
1		Aggregate base, dense graded (37.5 mm)	Cu.m	11,076.00	3,124.00
2		Aggregate, 20 mm	Cu.m	106.36	30.00
3		Asphalt concrete, cold mix	t	53.18	15.00
4		Asphalt concrete, Hot mix	t	227,260.00	65,640.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	745.03	210.14
6		Bitumen prime coat, cutback MC 30	ltr	62,736.46	17,694.90
7		Bitumen, straight run, 60/70 penetration	ltr	3,323.86	937.50
8		Block cement 400*200*100 mm	nr	48,750.00	13,750.00
9		Cement, ordinary Portland	t	15.95	4.50
10		Concrete pipe, reinforced 600 mm diameter	lm	106.36	30.00
11		Concrete pipe, reinforced 900 mm diameter	lm	26.59	7.50
12		Concrete pipe, reinforced 1200 mm diameter	lm	15.95	4.50
13		Concrete, Grade C 15	Cu.m	6,268.22	1,767.96
14		Concrete, Grade C 20	Cu.m	53.18	15.00
15		Concrete, Grade C 25	Cu.m	11,753.18	3,315.00
16		Concrete, Grade C 30	Cu.m	26.59	7.50
17		Formwork, timber (smooth)	sq.m	18,879.55	5,325.00
18		Formwork, timber (rough)	sq.m	1,000.00	260.00
19		Pipe, PVC, 90 mm diameter (Type 600)	lm	69.14	19.50
20		Reinforcement, high-yield steel, Grade 460/425	kg	390,664.77	110,187.50
21		Reinforcement, mild steel, Grade 250	kg	531.82	150.00
22		Rubble, 100 - 150 mm	Cu.m	132.95	37.50
23		Rubble, 150- 225 mm	Cu.m	255.27	72.00
24		River Sand	Cu.m	425.45	120.00
25		Paint, enamel	ltr	89.70	25.30

ROAD NAME- Peradeniya Hallooluwa Road & Polgahawela - Kegalle Road

ITEM		DESCRIPTION	UNIT	Peradeniya-Halloluwa-Kadugastotta Road	Polgahawela-Kegalle Road	
Bill	Pay			Central	Sabaragamuwa	North Western
1		Aggregate base, dense graded (37.5 mm)	Cu.m	5,845.00	24,244.00	6,061.00
2		Aggregate, 20 mm	Cu.m	167.00	182.40	45.60
3		Asphalt concrete, cold mix	t	10.00	8.00	2.00
4		Asphalt concrete, Hot mix	t	22,150.00	21,104.00	5,276.00
5		Bitumen emulsions, (CRS1, CRS2, CSS1)	ltr	27,573.00	26,376.00	6,594.00
6		Bitumen prime coat, cutback MC 30	ltr	21,595.00	41,220.00	10,305.00
7		Bitumen, straight run, 60/70 penetration	ltr	625.00	500.00	125.00
8		Cement, ordinary Portland	t	3.00	2.40	0.60
9		Concrete pipe, reinforced 600 mm diameter	lm	84.00	59.20	14.80
10		Concrete pipe, reinforced 900 mm diameter	lm	28.00	14.40	3.60
11		Concrete pipe, reinforced 1200 mm diameter	lm	13.00	18.40	4.60
12		Concrete, Grade C 15	Cu.m	108.00	102.40	25.60
13		Concrete, Grade C 20	Cu.m	1,175.00	585.60	146.40
14		Concrete, Grade C 25	Cu.m	70.00	212.80	53.20
15		Concrete, Grade C 30	Cu.m	5.00	4.00	1.00

16		Formwork, timber (smooth)	sq.m	3,990.00	3,024.00	756.00
17		Formwork, timber (Rough)	sq.m	3,925.00	4,028.00	1,007.00
18		Pipe, PVC, 90 mm diameter (Type 600)	lm	470.00	148.00	37.00
19		Reinforcement, high-yield steel, Grade 460/425	kg	47,125.00	96,900.00	24,225.00
20		Reinforcement, mild steel, Grade 250	kg	2,200.00	1,520.00	380.00
21		Rubble, 100 - 150 mm	Cu.m	25.00	20.00	5.00
22		Rubble, 150- 225 mm	Cu.m	248.00	218.40	54.60
23		River Sand	Cu.m	25.00	20.00	5.00
24		Precast concreat paving slabs 450*450*mm	Nos	2,717.00	11,852.00	2,963.00
25		Paint, emulsion	ltr	33.00	26.40	6.60
26		Paint, enamel	ltr	18.00	14.40	3.60

ANNEX 6.1: STANDARD ENVIRONMENTAL MANAGEMENT PLAN

For Improvement and Rehabilitation for national roads under RMC Package

District:
Road Name:
Road ID:
Total length:

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
I	**Design and Preconstruction Stage**					
1.	Climate Change Consideration and Vulnerability screening	○ Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required ○ Efforts shall be made to plant additional trees for increasing the carbon sink. The trees may be planted with help of DoF (Department of Forest) and space for additional planting will be explored with the help of DoF, Divisional Secretary (DS) and Community Based Organizations (CBO).	Throughout the subproject and other possible areas of tree planting	Design costs.	PIU, Design consultants	Project Implementation Unit (PIU)
2.	Clearing of vegetation and removing trees	○ All efforts shall be taken to avoid tree cutting wherever possible. ○ Requisite permission from DoF shall be obtained for cutting of roadside trees ○ Cut trees shall be handed over to the Timber Corporation. ○ Provision of Compensatory Afforestation shall be made on 1:3.ratio basis. ○ Only native species with the consent of DoF will be selected for replanting and locations for tree replanting will be as closer as possible to the tree removed. ○ And if road side space for replanting is not available, other possible locations such as schools, public areas will be explored with the help of DoF, DS and CBOs of the area. ○ Provision shall be made for additional compensatory tree plantation. ○ Any leftover of trees shall be removed and disposed in approved manner.	Throughout the subproject area	Costs for tree removal. Costs for compensatory tree replanting.	Contractor	PIU, Project Implementation Consultant (PIC), DoF

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
3.	Shifting of utilities	○ The proposed Right of Way (ROW) shall be clearly demarcated on the ground. ○ All efforts will be made to minimize shifting of utilities ○ Utility shifting shall be planned in consultations and concurrence of the relevant service provider. ○ Required permissions and necessary actions will be taken from relevant service provider on a timely basis for removing and shifting utility structures before road construction activities begin. ○ The public/users of the particular service should be aware well in advance about the timing of the shifting/removal of the relevant utility lines when the service will be disrupted	Utility poles located along either the side of the road which may be shifted due to the road improvement	Costs to cover shifting and reconstruction of utilities and common property resources must be included under project costs.	Contractor	PIU, PIC, CEB, Sri Lanka Telecom, NWS&DB, Community based water supply schemes if any
4.	Impacts to common properties	○ All efforts will be made to minimize shifting of common properties. ○ Structures with religious importance will not be damaged ○ Any common property built within the existing ROW and to be removed due to road improvement will be reconstructed as to the satisfactory level to the relevant owner	Throughout the road with special attention to any common property to be shifted	Costs of removing and repairing common properties	Contractor	PIU, PIC
5.	Hydrology and Drainage	○ Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. Here, special attention should be paid for flood prone areas if any. ○ The discharge capacity of the cross drainage structure shall be designed accordingly. ○ Provision of adequate drainage structures shall be made in water stagnant/logging areas. ○ The construction work near water body shall be planned preferably in dry season so that water quality of the water channel is not affected due to siltation and rain water runoff. ○ Provision of additional cross drainage	Near all drainage crossings, rivers, streams and tanks.	Included in project costs.	PIU, Design consultants	PIU

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides.				
II.	**Construction Stage**					
6.	Sourcing and transportation of construction material	**Borrow Earth:** o The borrow earth shall be obtained from borrow pits which are operated with GSMB and CEA approvals. o And if new borrow pits are opened for the subproject, necessary approvals and licenses should be obtained from GSMB and CEA. And all conditions laid down in such licenses should be strictly adhered. o All completed borrow pits should be rehabilitated to satisfy conditions given mining license of GSMB o Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying areas. **Aggregate :** o The stone aggregate shall be sourced from existing licensed quarries o Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIU through PIC. o Topsoil to be stockpiled and protected for use at the rehabilitation stage. **Transportation of Construction Material** o Existing tracks / roads are to be used for hauling of materials to the extent possible. o The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation.	Throughout the subproject area with special attention to borrow pits and quarries	To be included under contractors costs	Contractor	PIU, PIC
7.	Loss of Productive Soil, erosion and land use change	o The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. o It shall also be used as top cover of embankment slope for growing vegetation to	Throughout the subproject area and camps sites, storage areas and temporary offices	To be included under contractors costs	Contractor	PIU, PIC

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		protect soil erosion. o Shrubs shall be planted in loose soil area. o It shall be ensured that the land taken on lease for access road, construction camp and temporary office of the storage facilities is restored back to its original land use before handing it over to land owner.				
8.	Compaction and Contamination of Soil	o To prevent soil compaction in the adjoining productive lands beyond the ROW, the movement of construction vehicles, machinery and equipment shall be restricted to the designated haulage route. o The productive land shall be reclaimed after construction activity. o Fuel and lubricants shall be stored at the predefined storage location. o The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils. o All efforts shall be made to minimise the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal. o To avoid soil contamination at the wash-down and re-fuelling areas, “oil interceptors” shall be provided. Oil and grease spill and oil soaked materials are to be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to relevant parties. o Any land degraded due to construction activities should be restored to the satisfactory level of the owner	Throughout the project area with special attention to paddy and other agricultural lands	To be included under contractors costs	Contractor	PIU, PIC
9.	Establishment of Construction Camp, temporary office and storage area	o Construction camp sites and storage areas shall be located away from any local human settlements, water bodies and forested areas (minimum 0.2 km away) and preferably located on lands, which are not productive (barren/waste lands presently). o The construction camps, office and storage	Throughout the subproject area with special attention to labour camps, storage areas and office premises	To be included in contractor’s cost	Contractor	PIU, PIC, LA

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities. o The construction camps, office and storage areas shall have provision of septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use. o All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided to the extent possible. o The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children. o Personal Protective Equipments (PPEs) such as helmet, boots, earplugs for workers, first aid and fire fighting equipments shall be available at construction sites before start of construction. An emergency plan shall be prepared to fight with any emergency like fire. o Provision shall be made for domestic solid waste disposal in acceptable manner. The solid waste shall be handed over to the waste collecting system of the Local Authority (LA) of the area and wastewater should be disposed with the approval of the PIC. o Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.				
10.	Construction Debris and waste	o Excavated materials from roadway, shoulders, verges, drains, cross drainage will be used for backfilling embankments, filling pits, and landscaping. o Unusable debris material and removed pavements of roads should be suitably disposed off at pre-designated disposal locations, with approval of the concerned	Throughout the subproject area and all disposal sites	To be included under contractors costs	Contractor	PIU, PIC

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		authority such as LA/DS. o The bituminous wastes shall be disposed in secure manner and environmentally accepted manner. o In establishing disposal sites, unproductive/wastelands shall be selected with the help the PIC and villagers. The dumping site should be of adequate capacity. It should be located without causing nuisance to residential areas. Dumping sites should also be away from water bodies to prevent any contamination of these bodies.				
11.	Air and Noise Quality and vibration	o Vehicles delivering loose and fine materials like sand and aggregates shall be covered. o Establish temporary noise barriers and noise enclosures during the period of construction. o Dust suppression measures such as water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas. o Batching plants and asphalt (hot mix) should be operated with necessary licenses (Environmental Protection License (EPL) and trade license) and plants shall be located at least 0.2 km away and in downwind direction of the human settlements and should not disturb normal life of residents. o Material storage areas shall also be located downwind of the habitation area. o Hot mix plant shall be fitted with stack of adequate height (30m) or as may be prescribed in the EPL to ensure enough dispersion of exit gases. o Diesel Generators (DG) shall also be sound proof or fitted with stack of adequate height. o Construction vehicles and machineries shall be periodically maintained. o All heavy equipment and machinery shall be	Throughout the subproject road with special attention to schools, hospitals and religious places	To be included under contractors costs	Contractor	PIU, PIC

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		fitted in full compliance with the national regulation, Noise Control Regulations - Extra Ordinary Gazette No. 924/12 May 1996 amended by Extra Ordinary Gazette 937/7 April 1997. o Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration.				
12.	Tree plantation	o Compensatory afforestation shall be made on 1:3.ratio basis. o Only native species should be selected with the consent of DoF for replanting o Additional trees shall be planted wherever feasible. o Follow up maintenance of planted saplings will be carried out for a minimum of 3 years	Throughout the road.	To be included under contractors costs	Contractor	PIU, PIC
13.	Ground Water and Surface Water Quality and Availability	o The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected. o Water intensive activities shall not be undertaken during dry period to the extent feasible. o Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible. o Preventive measures such as proper storage of unsuitable soil, construction chemicals, servicing construction vehicles in approved sites, slope stabilisation, etc shall be taken for prevention of siltation and pollution of water bodies.	Throughout road with special attention to streams, tanks and marshes	To be included under contractors costs	Contractor	PIU, PIC
14.	Occupational Health and Safety	o The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to the construction workers and it should be ensured that labourers use PPE during working hours. o Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly.	Throughout the road	Costs to be borne by Contractor	Contractor	PIU, PIC

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		○ First aid facility should be readily available at every construction site throughout the construction period ○ Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/ storage areas. ○ Domestic solid waste at construction camp shall be properly collected and handed over to the solid waste collecting system of LA.				
15.	Traffic Management and Road Safety	○ Identify the areas where temporary traffic diversion may be required. ○ Prepare appropriate traffic movement plan approved by PIU and RDA for ensuring continued safe flow of traffic, pedestrians and all road users during construction. ○ Wherever, cross drainage structure work require longer construction time and road is to be blocked for longer duration, the PIC shall define appropriate measures for traffic diversion before the start of the construction. ○ Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should comply with the Road Safety Manual of RDA. ○ It is proposed to discuss with the Department of Railways for providing adequate safety measures at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both sides of the railway crossing. ○ Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone signs, pavement markers and any other such items will be provided to enhance the road safety where necessary at the completion of the project	Throughout the subproject area	To be included in contractor's cost	Contractor	PIU, PIC
16.	Biological impacts	○ No solid waste or spoil dumping sites, hot mix plants and worker camps should be located within or close to the protected	Near forest reserves, national parks, sanctuaries if any	To be included in contractor's	Contractor	PIU, PIC

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
		areas. Prior approval should be taken from the relevant department for entrance or temporary alteration of properties belongs to such areas. Strict worker force supervision should be carried out by the contractor when conducting construction work within the area and the construction works should be completed within a minimum specified time period.		cost		
III	**Post Construction and Maintenance Stage**					
17.	Site restoration	○ All construction camp/temporary office/material storage areas are to be restored to its original conditions or as agreed with the land owner. ○ The borrow areas rehabilitation will be as per the conditions laid down in GSMB approval.	All locations of construction camps/temporary office/ material storage, and borrow areas	To be borne by the contractor	Contractor (during maintenance period) and RDA	PIU/RDA
18.	Disposal of unsuitable material	○ All unsuitable material generated due to maintenance works including soil, vegetation, removed degraded road surface etc... should be disposed only at approved locations	Throughout the road	To be covered under road maintenance costs.	Contractor (during maintenance period) and RDA	PIU/RDA
19.	Hydrology and Drainage	○ Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. ○ Renovation of the drainage system by repairing removing encroachments/ congestions shall be regularly conducted	At project road locations with drainage structures	To be covered under road maintenance costs.	Contractor (during maintenance period) and RDA	PIU/RDA
20.	Degradation of water quality	○ Chemicals used for road maintenance should be carefully handled and stored ○ Storage facilities should sited well away from water bodies	Throughout the road with special care near water bodies	To be covered under road maintenance costs.	Contractor (during maintenance period) and RDA	PIU/RDA
21.	Air and Noise Quality	○ Placing sign boards for speed limitation and honking restrictions to be enforced near sensitive locations. ○ Removal of dust & mud collected on road surface to avoid dust emanation	Throughout the road	construction cost and maintenance cost	Contractor (during maintenance period) and RDA	PIU/RDA
22.	Extraction of material for road maintenance	○ Construction material shall be purchased only from licensed suppliers	Throughout the road	maintenance cost	Contractor (during maintenance	PIU/RDA

SL. NO.	Project Action/Environmental Attributes	Mitigation Measures	Location/numbers	Costs	Responsible for Implementing	Responsible for Monitoring
					period) and RDA	
23.	Tree replanting	○ Contractor to undertake survivability assessment and report to PIU the status of compensatory tree plantation. ○ Additional plants should be planted for dead plants if any	Tree replanted areas	To be borne by the contractor	Contractor (during maintenance period) and RDA	PIU/RDA
24.	Road safety	○ Safety of road users could be ensured during repairing of carriageway and hydraulic structures by placing standard sign boards, barricading of the repairing site etc...	Throughout the road	maintenance cost	Contractor (during maintenance period) and RDA	PIU/RDA

ANNEX 6.2: SAMPLE ENVIRONMENTAL MONITORING CHECKLISTS

I. Environmental Monitoring Checklist during Design and Pre-Construction Stage
For Improvement and rehabilitation of national Roads under RMC Package

District:
Road Name:
Road ID:
Total length:
Report No. and date:
Completed by:

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
1..	Climate Change Consideration and Vulnerability screening	○ Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required ○ Efforts shall be made to plant additional trees for increasing the carbon sink. The trees may be planted with help of DoF (Department of Forest) and space for additional planting will be explored with the help of DoF, Divisional Secretary (DS) and Community Based Organizations (CBO).	Throughout the subproject and other possible areas of tree planting		
2..	Clearing of vegetation and removing trees	○ All efforts shall be taken to avoid tree cutting wherever possible. ○ Requisite permission from DoF shall be obtained for cutting of roadside trees ○ Cut trees shall be handed over to the Timber Corporation. ○ Provision of Compensatory Afforestation shall be made on 1:3.ratio basis. ○ Only native species with the consent of DoF will be selected for replanting and locations for tree replanting will be as closer as possible to the tree removed. ○ And if road side space for replanting is not available, other possible locations such as schools, public areas will be explored with the help of DoF, DS and CBOs of the area. ○ Provision shall be made for additional compensatory tree plantation. ○ Any leftover of trees shall be removed and disposed in approved manner.	Throughout the subproject area		
3.	Shifting of	○ The proposed Right of Way (ROW) shall be clearly	Utility poles		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
	utilities	demarcated on the ground. o All efforts will be made to minimize shifting of utilities o Utility shifting shall be planned in consultations and concurrence of the relevant service provider. o Required permissions and necessary actions will be taken from relevant service provider on a timely basis for removing and shifting utility structures before road construction activities begin. o The public/users of the particular service should be aware well in advance about the timing of the shifting/removal of the relevant utility lines when the service will be disrupted	located along either the side of the road which may be shifted due to the road improvement		
4.	Impacts to common properties	o All efforts will be made to minimize shifting of common properties. o Structures with religious importance will not be damaged o Any common property built within the existing ROW and to be removed due to road improvement will be reconstructed as to the satisfactory level to the relevant owner	Throughout the road with special attention to any common property to be shifted		
5.	Hydrology and Drainage	o Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. Here, special attention should be paid for flood prone areas if any. o The discharge capacity of the cross drainage structure shall be designed accordingly. o Provision of adequate drainage structures shall be made in water stagnant/logging areas. o The construction work near water body shall be planned preferably in dry season so that water quality of the water channel is not affected due to siltation and rain water runoff. o Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides.	Near all drainage crossings, rivers, streams and tanks.		
6.	Grievance Redress	o Maintaining records of all environment related grievances raised, if any, and the actions taken to address them through the village level grievance redress committee (GRC) and PIU as applicable	All project roads.		

NOTE: Each report must enclose photographs to demonstrate the mitigation measures implemented

II. Environmental Monitoring Checklist during Construction Stage
For improvement and rehabilitation of national Roads under RMC Package

District:
Road Name:
Road ID:
Total length:
Report No. and date:
Completed by:

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
1.	Sourcing and transportation of construction material	**Borrow Earth:** o The borrow earth shall be obtained from borrow pits which are operated with GSMB and CEA approvals. o And if new borrow pits are opened for the subproject, necessary approvals and licenses should be obtained from GSMB and CEA. And all conditions laid down in such licenses should be strictly adhered. o All completed borrow pits should be rehabilitated to satisfy conditions given mining license of GSMB o Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying areas. **Aggregate :** o The stone aggregate shall be sourced from existing licensed quarries o Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIC through PIC. o Topsoil to be stockpiled and protected for use at the rehabilitation stage. **Transportation of Construction Material** o Existing tracks / roads are to be used for hauling of materials to the extent possible. o The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation.	Throughout the subproject area with special attention to borrow pits and quarries		
2.	Loss of Productive Soil, erosion and land use change	o The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. o It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion.	Throughout the subproject area and camps sites, storage areas and temporary offices		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		○ Shrubs shall be planted in loose soil area. ○ It shall be ensured that the land taken on lease for access road, construction camp and temporary office of the storage facilities is restored back to its original land use before handing it over to land owner.			
3.	Compaction and Contamination of Soil	○ To prevent soil compaction in the adjoining productive lands beyond the ROW, the movement of construction vehicles, machinery and equipment shall be restricted to the designated haulage route. ○ The productive land shall be reclaimed after construction activity. ○ Fuel and lubricants shall be stored at the predefined storage location. ○ The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils. ○ All efforts shall be made to minimise the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal. ○ To avoid soil contamination at the wash-down and re-fuelling areas, “oil interceptors” shall be provided. Oil and grease spill and oil soaked materials are to be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to relevant parties. ○ Any land degraded due to construction activities should be restored to the satisfactory level of the owner	Throughout the project area with special attention to paddy and other agricultural lands		
4.	Establishment of Construction Camp, temporary office and storage area	○ Construction camp sites and storage areas shall be located away from any local human settlements, water bodies and forested areas (minimum 0.2 km away) and preferably located on lands, which are not productive (barren/waste lands presently). ○ The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities. ○ The construction camps, office and storage areas shall have provision of septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use.	Throughout the subproject area with special attention to labour camps, storage areas and office premises		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		○ All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided to the extent possible. ○ The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children. ○ Personal Protective Equipments (PPEs) such as helmet, boots, earplugs for workers, first aid and fire fighting equipments shall be available at construction sites before start of construction. An emergency plan shall be prepared to fight with any emergency like fire. ○ Provision shall be made for domestic solid waste disposal in acceptable manner. The solid waste shall be handed over to the waste collecting system of the Local Authority (LA) of the area and wastewater should be disposed with the approval of the PIC. ○ Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.			
5.	Construction Debris and waste	○ Excavated materials from roadway, shoulders, verges, drains, cross drainage will be used for backfilling embankments, filling pits, and landscaping. ○ Unusable debris material and removed pavements of roads should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority such as LA/DS. ○ The bituminous wastes shall be disposed in secure manner and environmentally accepted manner. ○ In establishing disposal sites, unproductive/wastelands shall be selected with the help the PIC and villagers. The dumping site should be of adequate capacity. It should be located without causing nuisance to residential areas. Dumping sites should also be away from water bodies to prevent any contamination of these bodies.	Throughout the subproject area and all disposal sites		
6.	Air and Noise Quality and vibration	○ Vehicles delivering loose and fine materials like sand and aggregates shall be covered. ○ Dust suppression measures such as water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas.	Throughout the subproject road with special attention to schools, hospitals and religious		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		○ Batching plants and asphalt (hot mix) should be operated with necessary licenses (Environmental Protection License (EPL) and trade license) and plants shall be located at least 0.2 km away and in downwind direction of the human settlements and should not disturb normal life of residents. ○ Material storage areas shall also be located downwind of the habitation area. ○ Hot mix plant shall be fitted with stack of adequate height (30m) or as may be prescribed in the EPL to ensure enough dispersion of exit gases. ○ Diesel Generators (DG) shall also be sound proof or fitted with stack of adequate height. ○ Construction vehicles and machineries shall be periodically maintained. ○ All heavy equipment and machinery shall be fitted in full compliance with the national regulation, Noise Control Regulations - Extra Ordinary Gazette No. 924/12 May 1996 amended by Extra Ordinary Gazette 937/7 April 1997. ○ Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration.	places		
7.	Tree plantation	○ Compensatory afforestation shall be made on 1:3.ratio basis. ○ Only native species should be selected with the consent of DoF for replanting ○ Additional trees shall be planted wherever feasible. ○ Follow up maintenance of planted saplings will be carried out for a minimum of 3 years	Throughout the road.		
8.	Ground Water and Surface Water Quality and Availability	○ The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected. ○ Water intensive activities shall not be undertaken during dry period to the extent feasible. ○ Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible. ○ Preventive measures such as proper storage of	Throughout road with special attention to streams, tanks and marshes		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		unsuitable soil, construction chemicals, servicing construction vehicles in approved sites, slope stabilisation, etc shall be taken for prevention of siltation and pollution of water bodies.			
9.	Occupational Health and Safety	○ The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to the construction workers and it should be ensured that labourers use PPE during working hours. ○ Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly. ○ First aid facility should be readily available at every construction site throughout the construction period ○ Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas. ○ Domestic solid waste at construction camp shall be properly collected and handed over to the solid waste collecting system of LA.	Throughout the road		
10.	Traffic Management and Road Safety	○ Identify the areas where temporary traffic diversion may be required. ○ Prepare appropriate traffic movement plan approved by PIC and RDA for ensuring continued safe flow of traffic, pedestrians and all road users during construction. ○ Wherever, cross drainage structure work require longer construction time and road is to be blocked for longer duration, the PIC shall define appropriate measures for traffic diversion before the start of the construction. ○ Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should comply with the Road Safety Manual of RDA. ○ It is proposed to discuss with the Department of Railways for providing adequate safety measures at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both sides of the railway crossing. ○ Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone	Throughout the subproject area		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		signs, pavement markers and any other such items will be provided to enhance the road safety where necessary at the completion of the project			
11.	Biological impacts	○ No solid waste or spoil dumping sites, hot mix plants and worker camps should be located within or close to the protected areas. Prior approval should be taken from the relevant department for entrance or temporary alteration of properties belongs to such areas. Strict worker force supervision should be carried out by the contractor when conducting construction work within the area and the construction works should be completed within a minimum specified time period.	Near forest reserves, national parks, sanctuaries if any		
12.	Road reconstruction within flood prone areas	○ Contractor's activities shall not lead to flooding conditions as a result of blocked drainage paths and drains. The contractor shall take all measures necessary or as directed by PIC to keep all drainage paths and drains clear of blockage at all times. ○ If flooding or stagnation of water is caused by contractor's activities, contractor shall compensate for any loss of income or damage as a result. ○ When working in flood prone areas during rainy season the contractor shall avoid storing materials, chemicals and other items of work in areas where those can be washed away by the floods.	Flood prone areas crossed by the roads if any		
13.	Grievance Redress	○ Maintaining records of all environment related grievances raised, if any, and the actions taken to address them through the village level grievance redress committee (GRC) and PIU as applicable	All project roads.		

NOTE: Each report must enclose photographs to demonstrate the mitigation measures implemented

III. Environmental Monitoring Checklist during Post-Construction or Operation Stage
For improvement and rehabilitation of national Roads under RMC Package

District:
Road Name:
Road ID:
Total length:
Report No. and date:
Completed by:

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
1.	Site restoration	○ All construction camp/temporary office/material storage areas are to be restored to its original conditions or as agreed with the land owner. ○ The borrow areas rehabilitation will be as per the conditions laid down in GSMB approval.	All locations of construction camps/temporary office/ material storage, and borrow areas		
2.	Disposal of unsuitable material	○ All unsuitable material generated due to maintenance works including soil, vegetation, removed degraded road surface etc... should be disposed only at approved locations	Throughout the road		
3.	Hydrology and Drainage	○ Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. ○ Renovation of the drainage system by repairing removing encroachments/ congestions shall be regularly conducted	At project road locations with drainage structures		
4.	Degradation of water quality	○ Chemicals used for road maintenance should be carefully handled and stored ○ Storage facilities should sited well away from water bodies	Throughout the road with special care near water bodies		
5.	Air and Noise Quality	○ Placing sign boards for speed limitation and honking restrictions to be enforced near sensitive locations. ○ Removal of dust & mud collected on road surface to avoid dust emanation	Throughout the road		
6.	Extraction of material for road maintenance	○ Construction material shall be purchased only from licensed suppliers	Throughout the road		
7.	Tree replanting	○ Contractor to undertake survivability assessment and report to PIC the status of compensatory tree plantation.	Tree replanted areas		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		○ Additional plants should be planted for dead plants if any			
8.	Road safety	○ Safety of road users could be ensured during repairing of carriageway and hydraulic structures by placing standard sign boards, barricading of the repairing site etc...	Throughout the road		
9.	Grievance Redress	○ Maintaining records of all environment related grievances raised, if any, and the actions taken to address them through the village level grievance redress committee (GRC) and PIU as applicable	All project roads.		

NOTE: Each report must enclose photographs to demonstrate the mitigation measures implemented

ANNEX 6.3: ENVIRONMENTAL MONITORING PLAN (EMOP) FOR THE PERFORMANCE INDICATORS
RMC Package

Environmental Component	Project Stage	Parameters	Frequency	Locations	Standards	Rate	Approximate Cost (SLRs)	Implementation	Supervision
Air Quality	Preconstruction stage	TSPM, PM10, NO_x , CO, SO_x , Pb	Once	Minimum 2 locations (Locations to be identified with the help of PIC)	NAAQS of Sri Lanka	Rs 40,000 per location	80,000.00	Contractor through approved monitoring agency	RDA/ESDD
	Construction and operational stages	TSPM, PM10, NO_x, CO, HC, Pb, SO_x	2 times per year for 7 years	-do-	NAAQS of Sri Lanka	Rs 40,000 per location	1,120,000.00	Contractor through approved monitoring agency	RDA/ESDD
Water Quality	Preconstruction stage	EC, pH, DO, TSS, BOD, Oil and grease, Lead, E. Coli	Once	Minimum 2 locations (Locations to be identified with the help of PIC)	CEA advisory guidelines	Rs 10,000 per location	20,000.00	Contractor through approved monitoring agency	RDA/ESDD
	Construction and operational stages	EC, pH, DO, TSS, BOD, Oil and grease, Lead, E. Coli	2 times per year for 7 years	-do-	CEA advisory guidelines	Rs 10,000 per location	280,000.00	Contractor through approved monitoring agency	RDA/ESDD
Noise Levels	Preconstruction stage	dB levels	Once	Minimum 2 locations (Locations to be identified with the help of PIC)	National Environmental (Noise Control) Regulations 1996(no. 924/12)	Rs 10,000 per day	20,000.00	Contractor through approved monitoring agency	RDA/ESDD

Environmental Component	Project Stage	Parameters	Frequency	Locations	Standards	Rate	Approximate Cost (SLRs)	Implementation	Supervision
	Construction and operational stages	dB levels	2 times per year for 7 years	-do-	National Environmental (Noise Control) Regulations 1996(no. 924/12)	Rs 10,000 per day	280,000.00	Contractor through approved monitoring agency	RDA/ESDD
Flora	Preconstruction		1 visit	Locations to be identified with the help of PIC	Diversity of existing species	Rs 20,000 per visit	20,000.00	Contractor through approved monitoring agency	RDA/ESDD
	Construction and operational stages	Replanting of trees and Survival of trees	1 visit per year for 7 years	-do-	Diversity of species replanted	Rs 20,000 per visit	140,000.00	Contractor through approved monitoring agency	RDA/ESDD
Fauna	Preconstruction	Diversity of species	1 visit	Locations to be identified with the help of PIC		Rs 20,000 per visit	20,000.00	RDA	RDA/ESDD
	Construction and operational stages	Diversity of species	1 visit per year for 7 years	-do-		Rs 20,000 per visit	140,000.00	RDA	RDA/ESDD
	Total						2,120,000.00 (16,307.70 US$)		

ANNEX 7.1: SUMMARY OF PUBLIC CONSULTATION

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
01	Pilimathalawa-Ebilmeegama	Mawenella to Kandy	D.M Shantha	48	Male	279, Kehel waththa niwasa, Pilimathalawa	• Convenient transportation • Increases the economic condition of people • Save money and time • Create more job opportunities • Activities could be done on time and economically
02	Pilimathalawa-Ebilmeegama	Mawenella to Kandy	M.G Kasthuriarachchi	56	Male	Colombo road, Pilimathalawa	• Easy access to towns such as Kandy, Colombo etc. • Office workers could reach their work places quicker due to reduced travel time • Convenient for school children during the rainy season.
03	Yatinuwara-Govindara	Mawenella to Kandy	K.U Perera	46	Male	250/1C, Madagoda, Pilimathalawa	• Easy transportation • Save money and time • New industries may rise up • Convenient for school children as they can walk to school even during the rainy season.
04	Yatinuwara-Govindara	Mawenella to Kandy	Anoma Fenando	47	Female	No 50, Mada goda, Pilimathalawa	• Village development • Easy transportation and convenient • Easy access for hospitals, schools and fair • Easy for community services • Activities could be done on time and economically
05	Yatinuwara-Pilapitiya	Mawenella to Kandy	S.G Anura Bandara	40	Male	No 12, Colombo road, Kiribathkubura	• Rise up the living condition • Easy access to main cities • Help for children's education • Development of the area • Development of the agricultural sector
06	Yatinuwara-Kiribathkubura	Mawenella to Kandy	I.P Sugathapala	61	Male	179 B, Thalawaththa, Peradeniya	• Quick access to school, hospital and other public places • Easy for business activities • Saving time for transportation
07	Yatinuwara-Kiribathkubura	Mawenella to Kandy	M.A.L.K Thenabandu	55	Male	19, Kiribathkubura	• Increased economic activities of village communities • Easy access to school • Save time • Activities could be done on time and economically
09	Yatinuwara-Kiribathkubura	Mawenella to Kandy	H.S.N Silva	40	Male	No 02, Kiribathkubura	• Create more job opportunities • Easy access to towns

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Save time • Convenient transportation
10	Yatinuwara-Kiribathkubura	Mawenella to Kandy	A.Aluthge	50	Female	22 T, kiribathkubura	• Easy access to remote places • Save time and money • Easy access to school, hospital and market etc
11	Yatinuwara-Kiribathkubura-west	Mawenella to Kandy	T.B Herath	53	Male	No 57, Kiribathubura, Peradeniya	• Reduce the traffic jam • Convenient transportation • Easy access to cities • Development of the area
12	Yatinuwara - Kiribathkubura-west	Mawenella to Kandy	Champika Kaluarachchi	42	Male	No 59, Colombo road, Kiribathkubura	• Convenient and quick to reach the main town • Easy access to school, hospital and market • Save money and time • Development of the area
13	Yatinuwara-Kiribathkubura-west	Mawenella to Kandy	Mardawa Senewirathna	40	Male	No 57/A, Kiribathkubura	• Easy transportation • Save money and time • Easy access to public place
14	Yatinuwara-Kiribathkubura-west	Mawenella to Kandy	K.Walisundara	70	Male	No 375, Kehel mala, iribathkubura	• Active Public transportation will be a great advantage to the community in the area. • Economy development • Easy access to town • Create more job opportunities
15	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy	U.W.K Wijerathna	39	Male	267, Abilmeegama, Baddawela, Pilimathalawa	• Easy access to public places • Economic development • Development of living status • Save money and time
16	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy	M.P Baddawela	30	Male	267/3, Abilmeegama,Pilimathalawa	• Easy access foe main cities, school, market and hospitals. • Save time and money • Convenient transportation
17	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy	Saman Karunarathna	38	Male	267/4, Abilmeegama,Pilimathalawa	• Development of agriculture sector • Development of sanitary facilities • Increase job opportunity • Upliftment of living standard
18	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy	R.A Panditharathna	52	Male	Asswaduma, Pilimathalawa	• Easy access to main cities • Convenient transportation • Save money and time • Help children's education
19	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy]	K.P.G Tikiri Banda	60	Male	18/A, "Herath Gedara", Gogoda, Pillimathalawa	• Helps children's education • Convenient transportation activities • Save money and time • Possible to transport even in night time

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
20	Yatinuwara-Ebilmeegama-North	Mawenella to Kandy	P.G Gunatilaka	38	Male	264, Abilmeegama, Pilimathalawa	• Transportation will be more conveniant • Increase the living standard • Increase the land value
21	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	S.S Ranifa	56	Female	150/1, Uda Erriyagama, Peradeniya	• Easy access the major cities. • Save money and time • Development of the area • More security for elders, children and child bearing ladies
22	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	A.N.G Devenarayana	60	Male	169, Kritoper road, Peradeniya	• Easy to communicate with other villages • Increment of living standard • Development of the production sector and agriculture • People satisfaction
23	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	Shantha Bandra	40	Male	No 111, Uda Eriyagama, Peradeniya	• Development of Agricultural sector • Conveniant transportation • Save the environment • Easy access to public important places
24	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	A.M.K.S.B Adikari	35	Female	64/1, Uda Erriyagama, Peradeniya	• It is convenient for school children who walk to schools • Easy access to main cities • Save money and time • Development of the area
25	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	A.M.M Eriyagama	60	Male	44 C, Muruthalawa, Udairriyagama, peradeniya	• Easily connect with other villages activities • Connection with major cities • School children can reach schools on time • Economic development of the area
26	Yatinuwara-Udairiyagama-West	Mawenella to Kandy	S.Gamage	56	Male	No 33, Muruthalawa road, Peradeniya	• Strengthening of economic activities • Easy access to major cities • Save money and time • More security for elders, children and child bearing ladies
27	Yatinuwara-Eriyagama-East	Mawenella to Kandy	Amila Gunadasa	60	Male	110, Colombo road, Peradeniya	• Increased public services • Development of the area • Create new job oppertunities • Economic development of the village
28	Yatinuwara-Eriyagama-East	Mawenella to Kandy	Supun Tharanga	47	Male	124/6A, Colombo road, Peradeniya	• Public transportation will be improved • Could reach adjoining major cities soon • Easy access to school, hospitals and other public places
29	Yatinuwara-Pahala	Mawenella to Kandy	Amali Gunasekara	49	Female	131, Colombo road, Peradeniya	• Can save time for more education • Easy to access major cities, public places

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Eriyagama						• Can reach main cities within a shorter period of time
30	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	W.G Podinona	42	Female	No. 267, Edaduwawela, Peradeniya	• Link to adjoining cities • Easy access to school, hospitals and public places • Development of the area • Economic development of the area
31	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	M.A Kusumawathi	65	Female	No 271, Edaduwawela	• Increased living conditions • Economic development • Decreased transport cost • Easy access to main cities
32	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	A.W.J.K Priyanka	43	Female	No 271, Edaduwawa, Peradeniya	• Area development • Agriculture sector development • Could reach major cities easily • save transport time
33	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	E.G Padmini	38	Female	277/1, Adaduwewa, Peradeniya	• Upliftment of production sector • Increased living standards • Economic development • Decreased transport cost and travel time
34	Yatinuwara – Edaduwawewa-west	Mawenella to Kandy	W.M Warnapala	54	Female	273/1, Edaduwewa, Peradeniya	• Easy transportation • Easy access to major cities, schools, hospitals and market • Increased living condition • Development of production sector
35	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	M.M.R.H Kumarasingha	24	Male	270B, Amukotuwathe, Edaduwawa	• Easy access for school for school children • Convenient transportation • Save money and time
36	Yatinuwara-Edaduwawewa-west	Mawenella to Kandy	Nilmini Badubhashini	25	Female	270, Edaduwawe, Peradeniya	• Convenient transportation • Convenient for children's education • Patients could reach hospitals, school, market soon. • Easy access to major cities
37	Gangawata korale-Wel ata	Mawenella to Kandy	K.M.N Kularathna	32	Female	903A, Peradeniya road, Kandy	• More convenient to access to the School, Hospital, weekly fair, market, pharmacy etc. • Easy access to major cities • Economic development of the area
38	Gangawata korale-Uda bowela	Mawenella to Kandy	E.W Dassanayake	55	Male	2/13, "Sisila, Sri Amarawansha Mawatha, Peradeniya	• Upliftment of living standard • Economic development • Easy access to main cities • Create new job opportunities • Increase the land value
39	Gangawata	Mawenella to	N.S Alwis	70	Male	16/D, Galwela road,	• Convenient transportation

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	korale-Pahala Eriyagama	Kandy				Eriyagama	• Convenient for children's education • Patients could reach hospitals soon. • Save time and money
40	Gangawata korale-Pahala Eriyagama	Mawenella to Kandy	U.W Wilium	72	Male	161, Galwela road, Eriyagama	• Easy to reach town centers, school, market and other public important places • Could controlled soil erosion through road development • Increase land value • Save money and time
41	Gangawata korale- Pahala Eriyagama	Mawenella to Kandy	Asela Nawarathna	36	Male	Rajagiriya waththa, Subodarama mawatha, Peradeniya	• Easy to reach schools • Save the travel time and money • Increase business facilities • Increase land value
42	Gangawata korale- Pahala Eriyagama	Mawenella to Kandy	Dammika Kumari	41	Female	174/A, Pahala Eriyagama, Peradeniya	• Easy access to any place, school, hospital and bank etc • Development of the area • Increase the land value • Upliftment of living condition
43	Gangawata korale- Pahala Eriyagama	Mawenella to Kandy	Hemamali Ranasingha	52	Female	176, Pahala Eriyagama,	• Convenient for school children • Easy access to towns • Save money • Economic development
44	Gangawata korale-- Pahala Eriyagama	Mawenella to Kandy	S.S Sriyani	43	Female	177/A, Pahala Eriyagama, Peradeniya	• Easy access to important places • Save money and time • Upliftment of production sector • Increase the land value
45	Gangawata korale-Pahala Eriyagama	Mawenella to Kandy	M.S.L Ramyalatha	44	Female	410/B, Pahala Eriyagama, Peradeniya	• Upliftment of living standard • Easy access to any place • Increase unity f the province • Economic development
46	Gangawata korale- Pahala Eriyagama	Mawenella to Kandy	S.A Nilmini	50	Female	399, Pahala Eriyagama	• Increased living standards • Development of the agricultural and industrial sector • Save time and money • Easy access to any public important places, school, market, bank etc.
47	Gangawata korale –Uda Bowela	Mawenella to Kandy	T.G.I.B Wijepala	32	Male	1/13, Sri Amarawansha road, Peradeniya	• Increase the land value • Save time and money • Economic development
48	Gangawata korale- Uda	Mawenella to Kandy	D.G Kalyani	38	Female	46, Sri Amarawansha road, Peradeniya	• Convenient for children's education • Easy access to major cities, hospitals, schools etc.

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Bowela						• Save money and time
49	Gangawata korale- Uda Bowela	Mawenella to Kandy	Malkanthi Silva	50	Female	77, Amarawansha Mawatha, Peradeniya	• Industrial development • Increase the land value • Convenient transportation • Save time and money
50	Gangawata korale- Uda Bowela	Mawenella to Kandy	Kanthi Jayalath	47	Female	1, Sugatha Wimala mawatha, Peradeniya	• Easy transportation to market • Development of business, agriculture and industrial sector • Easy access to major towns
51	Gangawata korale- Uda Bowela	Mawenella to Kandy	N.S Perera	24	Male	14/4, Amarawansha Mawatha, Peradeniya	• Increase the land value • Create more job opportunities • Save money and time • Increase land value
52	Gangawata korale- Uda Bowela	Mawenella to Kandy	Nilmini Kumari	35	Female	Thalawaththa,Peradeniya	• Easy to reach schools • Save the money and time • Increase business facilities • Upliftment of living standards
53	Gangawata korale-Katukele	Mawenella to Kandy	F.F Nizar	20	Male	8B , Wewa road, Katuele	• Create more job opportunities • Economic development • Upliftment of the living standards • Increase the unity of the people of the area
54	Gangawata korale-Katu kele	Mawenella to Kandy	K.Guruge	62	Female	No 10, Wewa road, atukele	• Easy access to many places, schools, pre schools, market • Reduce road accidents • Reduce soil erosion • Save money and time • Economic development
55	Gangawata korale-Katu kele	Mawenella to Kandy	R.Priyanthi	40	Female	25/16B, Pushpadana mawatha, Kandy	• Development of the area • Number of retail shops, industrial development could be started • Easy access to hospitals, school and market etc.
56	Gangawata korale-Katu kele	Mawenella to Kandy	R.Krishnan	49	Male	25/20c, Pushpadana road, Kandy	• Increase the sanitary facility • Easy access to town, school, preschool and market • Save money and time. • Economic development
57	Gangawata korale-Katu kele	Mawenella to Kandy	K.M Mohidin	51	Male	17/3, Pushpadana Mawatha, Kandy	• Reduce the soil erosion • New industries will come up • Create new job opportunity • Easy access to cities and important places • Convenient transportation

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
58	Gangawata korale-Katu kele	Mawenella to Kandy	R.Indumathi	37	Female	25/20,Kandy	• Develop the area • Increase the land value • Economic development • Convenient transportation
59	Gangawata korale-Ogastawaththa	Mawenella to Kandy	E.G.P Nimal Premarathna	56	Female	1/2, Ogasta waththa, Kandy	• Save money and time • Easy access to major cities • Create more job opportunities
60	Gangawata korale-Katukele	Mawenella to Kandy	Y.Sarojini	29	Female	4/6,Katukapil, Peradeniya	• Create more job opportunities • Save money and time • Business activities could be easy • Convenient and quick access to main cities
61	Gangawata korale-Katuele	Mawenella to Kandy	18	39	Male	69/38, Sri Amarawansha Mawatha, Peradeniya	• Development of business sector • Easy access to school children • Easy access to medical facilities • Save money and time
62	Gangawata korale-Katukele	Mawenella to Kandy	A.Kumara	32	Male	25/20B, Kandy	• New industries will come up • Increase living standards • Increase land value • Development of agricultural sector • Save money and time
63	Gangawata korale-Katukele	Mawenella to Kandy	R.M.K Malkanthi	46	Female	B 69/5, Panakawa, Kegalle	• Risk could be minimized during rainy season • Travel time could be reduce • Could increase land value • Economic development • Convenient transportation
64	Gangawata korale-Mahanuwara	Mawenella to Kandy	R.J Jayarathna	64	Male	68/01, In front of school, Panakawa road, Kegalle	• Reduce the vehicle repair cost • Convenient transportation • Upliftment of living standards • Development of the area • Increase the land value
65	Gangawata korale-Mahanuwara	Mawenella to Kandy	Palitha Jayasingha	48	Male	779/A/1, Mulgampala road, Peradeniya	• New industries will come up • Easy access to main cities and towns. • Save money and time • Easy access to educational centers
66	Gangawata korale-Mahanuwara	Mawenella to Kandy	Chandana Gunawardhana	45	Male	777/2, Peradeniya	• Patient could reach hospitals soon • Could easily reach the house • Convenient transportation • Can minimize cost for hiring vehicles • Easy access to city
67	Gangawata korale-	Mawenella to Kandy	A.R.M Rasim	39	Male	781/1, Peradeniya road,Kandy	• Convenient transportation • Convenient transportation for school children

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Mahanuwara						• Economic development • Land values will be increased • Easy access to major cities
68	Gangawata korale-Mahanuwara	Mawenella to Kandy	M. Fahim	31	Male	781/2/1/, Mulgampala road, Peradeniya	• Easy access to market, school, preschools and other important places • Vehicles repair will be minimized • Private transportation will be minimized • Convenient transportation
69	Gangawata korale-Mahanuwara	Mawenella to Kandy	J.A Sagara	33	Male	28/1 , Heerasagala road,Mulgampala	• Could reduce the travel time • Can gain more benefits • Easy access to town and cities • Save money and time • Upliftment of living standards
70	Gangawata korale-Mahanuwara	Mawenella to Kandy	P.Premasingha	78	Male	757, Peradeniya road, Kandy	• Development of agricultural sector • Save money and time • Quick access to medical facilities • Upliftment of living conditions • Convenient transportation
71	Gangawata korale-Gatabe	Mawenella to Kandy	Lalith Perera	30	Male	25/3, Gatabe	• Patients could reach hospitals easily • Easy access to religious places • Convenient transportation • Increase land value
72	Gangawata korale-Gatabe	Mawenella to Kandy	Pushpa kumara	32	Male	308/16, Gatabe	• Government officers, private dealers can reach village easily • Could reduce transport time and cost • Easy access to main cities • Development of the area
73	Gangawata korale-Mahanuwara	Mawenella to Kandy	M.G Perera	55	Male	783,Mulgampola road, Kandy	• Urban facilities could reach the village • Accidents could be reduced • Easy for good transportation
74	Gangawata korale-Mahanuwara	Mawenella to Kandy	Krishna Kumar	28	Male	789, Peradeniya road, Mulgampola	• Convenient of business activities • Development of business sector • Easy access for any important places • Road accidents could be minimized • Save money and time
75	Gangawata korale-Mahanuwara	Mawenella to Kandy	I.Rathnayake	63	Female	795,Peradeniya road,Kandy	• Easy access to medical facilities • Easy access for school ,preschool and educational centers • Convenient transportation • Upliftment f living standards

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
76	Gangawata korale-Welata	Mawenella to Kandy	A.P Piyadasa	63	Male	793,Peradeniya road, Kandy	• Development of Agricultural sector • Development of business sector • Easy way of transportation • Save time and money
77	Gangawata korale-Welata	Mawenella to Kandy	Milroy Jayasingha	30	Male	9/D-8, Peradeniya road, Kandy	• Public transportation will be improved • Easy access for educational centers, and medical facilities • Save transport time
78	Gangawata korale-Welata	Mawenella to Kandy	Hiran Wijewickrama	40	Male	654,Peradeniya road,Kandy	• Development of the area • Easy access for educational centers • Public transportation will be improved • Development of the agricultural sector • Development of the business sector
79	Gangawata korale-Welata	Mawenella to Kandy	Srimathi Rajapaksha	69	Female	865/A,Peradeniya road,Kandy	• Easy access to the market • Easy access to school, preschool and other educational centers
80	Gangawata korale-Welata	Mawenella to Kandy	Lalith Wimalagunawardhana	47	Male	801, Peradeniya road,Kandy	• Convenient for school children and government agents • Easy for transportation • Development of the area • Increase land value
81	Gangawata korale-Welata	Mawenella to Kandy	Saman Priyantha	44	Male	721,Peradeniya road, Kandy	• Increase the economic condition of the people • Public transportation will be improved • Easy access to public places • Increase land value
82	Gangawata korale-Welata	Mawenella to Kandy	Rohan Wimalarathna	32	Male	725, Peradeniya road, Kandy	• Easy transportation • Save time and money • Easy access for educational centers • Development of production
83	Gangawata korale-Welata	Mawenella to Kandy	Laksman Dehideniya	40	Male	731, Peradeniya road,Kandy	• It's more convenient for school education • Easy access for major cities • Develop the area • Convenient transportation • Can reduce the cost
84	Gangawata korale-Welata	Mawenella to Kandy	Osman Perera	50	Male	743,Peradeniya road,Kandy	• Will avoid village isolation • Strengthen the economic activities • Increase the land value • Save money and time for transportation • Reduce cost for hiring vehicals
85	Gangawata	Mawenella to	B.Weerakkody	60	Male	745,Peradeniya	• Can reach major towns with in shorter time

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	korale-Welata	Kandy				road,Kandy	• Development of business sector • Rise up more job opportunities • Increased services
86	Gangawata korale-Welata	Mawenella to Kandy	Shasikala Nithyaraja	21	Female	715,Peradeniya road, Kandy	• Patients could reach hospitals soon • Economic development of the area • Increase land value • Save money and time for transportation • Connection with adjoining villages
87	Gangawata korale-Welata	Mawenella to Kandy	Ayesh Kanchana	39	Male	30,Prirose road, Kandy	• Facilitate easy transportation • Easy to access medical centers, educational centers etc • Development of the area • Reduce the vehicle repairs
88	Gangawata korale-Welata	Mawenella to Kandy	M.P Samansiri Soyza	38	Male	97 A, Primrose road, Kandy	• Good for road development • Economic upliftment of the area • Increase land value • Easy access for major cities
89	Gangawata korale-Welata	Mawenella to Kandy	Sunil Rathnayake	45	Male	37, Primrose road,Kandy	• Development of agricultural sector • Patients could reach hospitals easily • Increase the land value • Reduce the transport cost • Convenience transportation
90	Gangawata korale-Welata	Mawenella to Kandy	Anura Alahakoon	57	Male	12/B,Mulgampala road,Kandy	• Easy transportation • Easy to reach schools • Shorten the transport time • Save money
91	Gangawata korale-Welata	Mawenella to Kandy	Shantha Aththanagoda	51	Male	36/1, Peradeniya road,Kandy	• Increase the business facilities • Convenient transportation • Easy access for schools and major cities • Easy access for land
92	Gangawata korale-Welata	Mawenella to Kandy	Ajith Madawela	31	Male	72, Mulgampola road, Kandy	• Easy access to hospital • Easy access to school • Can transport goods easily • Can save money and time
93	Gangawata korale-Welata	Mawenella to Kandy	Chandana Suugathapala	43	Male	601, Mulgampola road,Kandy	• Convenient transportation • Development of the area • Increase the land value • Save money and time
94	Gangawata korale-Welata	Mawenella to Kandy	K.Rathnayake	47	Male	27,Primrose road, Kandy	• Facilitate the transport facility • Easily connection with major cities

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Easy access for educational centers and hospitals • Town development • Save money and time
95	Gangawata korale-Welata	Mawenella to Kandy	P.B Ekenayake	61	Male	67/2, Mulgampola road, Kandy	• Business development • Easy access to main cities • Convenient transportation • Save money and time
96	Gangawata korale-Welata	Mawenella to Kandy	Chamindi Adikari	39	Female	691/6, Willium Gopallawa road, Kandy	• Economy development of the area • Save money and time • Easy access to educational centers • Development of agricultural sector • Development of the business sector
97	Gangawata korale-Welata	Mawenella to Kandy	J.A Rajapaksha	53	Male	691/4,Peradeniya road,Kandy	• Land value will be increases • Town development • Easy access to community centers
98	Gangawata korale-Welata	Mawenella to Kandy	D.M.P.S Dissanayake	34	Female	651/2A, Willium Gopallawa road,Kandy	• New industries will come up • Create new job opportunities • Easy access to educational centers • Convenient transportation
99	Gangawata korale-Welata	Mawenella to Kandy	J.Dumbarasekara	52	Female	16,Kandy road, Mulgampola	• Economic development • Land value will rise up • Upliftment of the living status • Convenient transportation
100	Gangawata korale-Welata	Mawenella to Kandy	Nelum Rathnayake	38	Female	Kandy road,Mulagampola	• Development of agricultural sector • Easy access to school, hospitals etc. • Reduce the transport cost and time • Easy to connect with other cities
101	Gangawata korale-Welata	Mawenella to Kandy	K.D Dissanayake	37	Male	25/2,Primrose road,Kandy	• Convenient transportation • Easy access to preschool and other educational centers • Economic development • Save money and time
102	Gangawata korale-Welata	Mawenella to Kandy	Sunil de Silva	51	Male	113, Mulgampola road,Kandy	• Easy access to towns. • Office workers could reach their work places quicker due to reduced travel time • Convenient for school children during the rainy season. • Save money and time
103	Gangawata korale-Welata	Mawenella to Kandy	U.J Rajakaruna	60	Male	25/1, Primrose road,Kandy	• Easy transportation • Save money and time • New industries may rise up

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Convenient for school children as they can walk to school even during the rainy season.
104	Gangawata korale-Welata	Mawenella to Kandy	B. Abegunarathna	35	Male	25/1, Primrose road,Kandy	• Convenient transportation • Land value will rise up • Easy access to market, fair ,school and working places • Cost for hiring vehicles will be minimized
105	Gangawata korale-Mahanuwara	Mawenella to Kandy	Geetha Irangani	45	Female	794,Peradeniya road,Kandy	• Strengthening of economic activities • Development of agriculture sector • Easy access to major cities • Save money and time
106	Gangawata korale-Mahanuwara	Mawenella to Kandy	R.S Peris	42	Male	805, Mulgampola road, Kandy	• Increased public transport services • Development of the living area • Create new job opportunities in various sectors • Convenient transportation for school children and office workers
107	Gangawata korale-Mahanuwara	Mawenella to Kandy	Indika Malwaththa	35	Male	809, Peradeniya road, Mulgampola	• Public and private transportation will be improved • Easy access to school, hospitals and other public places • Save more time for education • Development of agriculture sector
108	Gangawata korale-Mahanuwara	Mawenella to Kandy	Mohomad Ansar	48	Male	811, Peradeniya road, Mulgampola	• Could easily reach any important place • Can save time due to convenient transportation • Easy to access major cities, public places • Economic development of the area
109	Gangawata korale-Mahanuwara	Mawenella to Kandy	I.Senevirathna	51	Male	815/A, Peradeniya road,Kandy	• Easy access to school, hospitals and public places • Agriculture, business sector development of the area • Could easily travel even in night time • Save money for transportation
110	Gangawata korale-Mahanuwara	Mawenella to Kandy	S.M.S Samarakoon	22	Female	831, Perdeniya road,Kandy	• Increased living conditions of the people in the area • Economic development • Decreased transport cost • Save more time for education
111	Gangawata korale-Mahanuwara	Mawenella to Kandy	P.Wijerathna	59	Male	835, Peradeniya road,Kandy	• Agriculture sector development due to easy transportation • Could reach major cities easily and increase unity of the area • save time and money due to convenient transportation

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
112	Gangawata korale-Mahanuwara	Mawenella to Kandy	M.Thilakawardhana	65	Male	Peradeniya road,Kandy	• Upliftment of agriculture production sector • Increased living standards • Economic development of the area • Could transport even in night time • More security of adults and young children
113	Gangawata korale-Mahanuwara	Mawenella to Kandy	M.G.H Wickramanayake	60	Male	847, Peradeniya road,Kandy	• Decrease road accidents • Easy transportation for school children and working people • Easy access to major cities • Increased living condition
114	Gangawata korale-Mahanuwara	Mawenella to Kandy	Daya Weerarathna	47	Female	855, Peradeniya road,Kandy	• Convenient transportation for school for school children • Save money and time due to efficient transportation • Economic development of the area • Create more new job oppertunities
115	Gangawata korale-Mahnuwara	Mawenella to Kandy	M.H.M Madusari	65	Female	863, Peradeniya road,Kandy	• Convenient for school children's education • Save more time due to efficient transportation • Patients could reach hospitals, school, market soon. • Easy access to major cities • Economic development of the area
116	Gangawata korale-Mahanuwara	Mawenella to Kandy	Pradeep Aroshan	34	Male	Peradeniya road,Kandy	• More convenient to access to the School, Hospital, weekly fair, market, pharmacy etc. • Economic development of the area • Agriculture sector development due to efficient transportation of agriculture products
117	Gangawata korale-Mahanuwara	Mawenella to Kandy	P.G Rathnayake	50	Female	Peradeniuya road,Kandy	• Economic development of the area due to agriculture and business sector development • Create more job opportunities • Easy access to main cities • Increase the land value of the area
118	Gangawata korale-Ihala Katukele	Mawenella to Kandy	S.Amalaweri	66	Female	33/17, Peradeniya road,Kandy	• Convenient transportation for school children and office workers • Convenient for children's education • Patients could reach hospitals soon. • Save time and money • Reduce road accidents
119	Gangawata korale- Ihala Katukele	Mawenella to Kandy	Rafila Umma	85	Female	33/2, Peradeniya road,Kandy	• Could controlled soil erosion through road development • Increase land value of the area

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Economic development through business and agriculture sector development • Save money and time
120	Gangawata korale- Ihala Katukele	Mawenella to Kandy	Siththi Safia	40	Female	31/20, Peradeniya road, Kandy	• Save the travel time and money • Convenient transportation • Increase business facilities via easy transportation of goods • Increase land value of the area
121	Gangawata korale- Ihala Katukele	Mawenella to Kandy	Dharmesh Kumar	56	Male	33/20, Peradeniya road,Kandy	• Economic development of the area • Increase the land value • Upliftment of living condition • Save more time for education due to convenient transportation
122	Gangawata korale- Ihala Katukele	Mawenella to Kandy	M.Rajesh	76	Male	33/8, Peradeniya road,Kandy	• Easy access to adjacent major towns • Save money for hiring private vehicles • Economic development f the area • Business and agriculture sector development
123	Gangawata korale- Ihala Katukele	Mawenella to Kandy	Siththi Farusia	68	Female	33/18, Peradeniya, Kandy	• Easy access to many important places • Convenient transportation for children's education • Increase the land value of the area • Agriculture sector and business sector development via easy transportation of goods
124	Gangawata korale- Ihala Katukele	Mawenella to Kandy	P.Rashwi	61	Female	33/18/B, Peradeniya road,Kandy	• Convenient and quick to reach the working places • Easy access to school, hospital and market • Create more job opportunities in agriculture and industrial sector • Save money and time due to convenient transportation
125	Gangawata korale-Ihala katukelle	Mawenella to Kandy	M.Rawshi	41	Male	33/48, Peradeniya, Kandy	• Save time and money for transportation • Easy access to public important places • Reduce the road accidents • Reduce the cost for hiring vehicles • More security for elders, children and child bearing ladies
126	Gangawata korale-Ihala Katukele	Mawenella to Kandy	R. Anandan	42	Male	33/11, Peradeniya road, Kandy	• Active Public transportation will be a great advantage for middle income group • Economy development of the area • Easy access to major cities • Reduce the cost for repairing vehicles • Patients could reach hospitals soon.

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
127	Gangawata korale-Ihala Katukele	Mawenella to Kandy	V.Akbhasi	63	Female	33/26, Peradeniya road, Kandy	• Easy access to public important places • Economic development through convenient transportation • Development of living status of the people in the area • More security for adults and women due to convenient transportation
128	Gangawata korale-Ihala Katukele	Mawenella to Kandy	Dulfar Rasal	41	Female	33/27, Peradeniya road, Kandy	• Easy access to important places • Save money and time due to efficient transportation • Easy to access government and private services • Save more time for school children's education
129	Gangawata korale-Ihala Katukele	Mawenella to Kandy	Ranga Perera	30	Female	Bahirawakanda, Katukele	• Development of agriculture sector and business sector • Increase job opportunity • Development of the public and private transport systems • Save more time and money • Economic development of the area
130	Gangawata korale-Ihala Katukele	Mawenella to Kandy	Soma Weejeweera	48	Female	Bahirawa kanda, Kandy	• New industries will come up • Convenient transportation for school children and office workers • Could reach cultivated land within a short time • Convenient for children's education
131	Gangawata korale-Ihala Katukele	Mawenella to Kandy	Ardithya Pathiraja	25	Female	Bahirawa Kanda, Kandy	• Convenient transportation activities • Save money and time due to efficient transportation • Possible to transport even in night time • Empowering women due to more self employment opportunities
132	Gangawata korale-Ihala Katukele	Mawenella to Kandy	H.M.P.B Herath	48	Male	Bahirawa kanda, Kandy	• Transportation will be more secure and convenient • Can reach other major cities soon • Increase the unity of the area through easy communication • Empowering women through development of small scale industries
133	Gangawata korale-Ihala katukele	Mawenella to Kandy	I.V Sumanadasa	62	Male	Bahirawa kanda,Mahanuwara	• Easy access the major cities. • Convenient transportation for children and working people • Development of Agriculture and business sectors • Reduce cost for hiring vehicles

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Vehicle repair will be minimum
134	Gangawata korale-Ihala Katukele	Mawenella to Kandy	U.Samarasuriya	55	Male	Bahirawa Kanda, Kandy	• Easily connection between adjacent major cities • Activities could be done on time and economically • Development of each and every sector • Empowering women through staring small scale business • Easy to travel even at night time
135	Gangawata korale-Ihale katukele	Mawenella to Kandy	Dushmantha Aruna kumara	36	Male	Bahirawa kanda, Kandy	• Convenient transportation especially for school children and employees • Sick people could reach hospitals with conveniently • Efficient economic activities in the area • Development of Agricultural sector and business sector
136	Gangawata korale-Ihala katukele	Mawenella to Kandy	Rohana Siril Fenando	49	Male	Bahirawa kanda, Kandy	• Easy access to main adjacent cities • Empowering women through development of small scale industries • Economic development the area • Increase the land value
137	Gangawata korale-Ihala katukele	Mawenella to Kandy	H.M Alahakoon	54	Male	35,Bahirawa kanda, Kandy	• Connection with major cities • Economic development of the area • School children can reach schools on time • Development of agriculture and business sector
138	Gangawata korale-Ihala katukele	Mawenella to Kandy	S. Abdulla	49	Female	33/29, Peradeniya road, Kandy	• Strengthening of economic activities • Easy access to major cities • Convenient transportation • Can transport even in night • More security for elders, children and child bearing ladies
139	Gangawata korale-Ihala katukele	Mawenella to Kandy	M.Fazmi	48	Male	33/32, Peradeniya road,Kandy	• Develop the public and private transport services • Economic development of the village • Easy access to cites • Empowering women through create small scale house hold business
140	Gangawata korale-Ihala katukele	Mawenella to Kandy	R.S Jayaweera	42	Male	Bahirawakanda, Kandy	• Could reach adjoining villages soon • More security for elders, children and child bearing ladies • Economic development of the area • Land value will rise up
141	Gangawata korale-Ihala	Mawenella to Kandy	W.S Jayasoma	72	Male	Bahirawa kanda,Katukele	• Efficient transportation • Can save time for more education and other

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	katukele						duties • Easy to access major cities • Development f production sector • Reduce cost for hiring vehicles
142	Gangawata korale-Ihala katukele	Mawenella to Kandy	Athula Ranjith	35	Female	Bahirawa kanda, Ihala katukele	• Convenient transportation for office workers • Development of new business • Create new job opportunities • Easy access to school, hospitals and public places
143	Gangawata korale-Ihala katukele	Mawenella to Kandy	H.K Wanigarathna	49	Male	Bahirawa kanda, Ihala katukele	• Increased living conditions of the area • Increase sanitary facilities • Decreased transport cost • Easy access to main cities • Increase land value
144	Gangawata korale-Ihala katukele	Mawenella to Kandy	G.R Dissanayake	49	Male	Bahirawa kanda, Ihala katukele	• Decreased transport cost and travel time • Reduce the vehicle repairing cost • Agriculture sector and industrial sector development • Could reach major cities easily
145	Gangawata korale-Ihala katukele	Mawenella to Kandy	Neela Kumari	59	Female	Bahirawa kanda, Ihalakatukele	• Upliftment of living standards • Decreased transport cost and travel time • More security for elders, children and child bearing ladies • Can transport even in night time
146	Gangawata korale-Ihala katukele	Mawenella to Kandy	Nandani Jayasingha	37	Female	Peradeniya road, Kandy	• Convenient transportation • Save money and time for transportation • Empowering women through create more small scale house hold business • Economic development of the area
147	Gangawata korale- Ihala katukele	Mawenella to Kandy	Sumana Athukorala	48	Female	20, Peradeniya road,Kandy	• Development of agricultural and industrial sectors • Save money and time for transportation • Development of the public and private transport system • More security for elders, children and child bearing ladies

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
148	Gangawata korale- Ihala katukele	Mawenella to Kandy	Siril Abesundara	42	Male	16,Peradeniya road,Kandy	• Patients could reach hospitals soon. • Easy access to major cities • Save money and time for transportation • Economic development of the area • Empowering women through development of small scale industries
149	Yatinuwara-Urapola	Mawenella to Kandy	P.B Abesundara	59	Male	11, Urapola, Pillimathalawa	• Convenient transportation for adult, women and children • Decrease in the number of road accidents in this area • Easily connect with other major cities • Economic development of the area
150	Yatinuwara-Urapola	Mawenella to Kandy	U.B Ketakubura	38	Male	26/ Urapola, Pillimathalawa	• Create new job opportunities with the development of the industrial sector • Upliftment of living standard • Decreased transport cost/ reduce vehicle hiring cost • Easy access to main cities
151	Yatinuwara-Urapola	Mawenella to Kandy	Samadhi Dissanayake	19	Female	68/B/1, Urapola, Pillimathalawa	• Convenient transportation for school children • Could reach cultivated land within a short time • Patients could reach hospitals soon. • Development of agriculture sector/business sector • Land value will rise up
152	Yatinuwara-Urapola	Mawenella to Kandy	Padma Bandara	37	Male	70/12, Urapola, Pillimathalawa	• Convenient transportation • Easy to reach major cities • Can easily transport agricultural products and industrial items • Could controlled soil erosion through road development
153	Yatinuwara-Urapola	Mawenella to Kandy	P.B Ranilatha	47	Female	68,Urapola, Pillimathalawa	• Easy to reach schools/offices/working places • Shorten the transport time and cost • Increase business facilities • Create more new job opportunities
154	Yatinuwara-Urapola	Mawenella to Kandy	H.M Harshaka	19	Male	“Tilaka sevena”, Urapola, Pillimathalawa	• Easy access to any place/major city centers/hospitals/educational centers • Activities could be done on time and economically • Development of the area • Increase the land value • Save time and money for transport
155	Yatinuwara-	Mawenella to	D.B Weerakoon	39	Male	503, Nanu oya,	• Convenient for school children/officers during the

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Urapola	Kandy				Pillimathalawa	rainy season. • Easy access to towns due to the road construction • Office workers could reach their work places quicker due to reduced travel time
156	Yatinuwara-Urapola	Mawenella to Kandy	Rajika Uthpala	40	Female	578, Nanuoya,pillimathalawa	• Easy access to important places/school/hospital/working places • Reduce the transport time and save money and time • Upliftment of production sector • Economic development of the area
157	Yatinuwara-Urapola	Mawenella to Kandy	Tissa Wijekoon	20	Male	131, Nanu oya, Pillimathalawa	• Upliftment of living standard • Easy to communicate with others in the adjacent areas • Increase unity of the province • Development of the industrial sector
158	Yatinuwara-Urapola	Mawenella to Kandy	P.M Senevirathna	83	Male	Deniya, Nanu oya, Pillimathawawa	• Increased sanitary facility • Decreased transport cost and travel time • More security for elders, children and child bearing ladies • Empowering women due to the facilitate small scale house hold industries
159	Yatinuwara-Urapola	Mawenella to Kandy	Jayasiri Wijekoon	48	Male	126/B, Deniya,Nanuoya, Pillimathalawa	• Economic development of the area • Save time and money • Convenient transportation • Development of the sanitary facilities • Easy to travel even in night time
160	Yatinuwara-Urapola	Mawenella to Kandy	K.M Lakshman	44	Female	Heerasagala, Pillimathalawa	• Easily transport goods • Easily communicate with other outsiders • Government agents can easily come and meet villages and provide necessary facilities • Economic development of the area
161	Yatinuwara-Urapola	Mawenella to Kandy	P.M Wijesiri	40	Female	127/2, Deniya, Nanuoya, Pillimathalawa	• Convenient transportation foe children and elder people. • Easy access the major cities and educational centers • Development of the industrial sector and agriculture sector • More security for elders, children and child bearing ladies
162	Yatinuwara-Urapola	Mawenella to Kandy	G.S Jayasingha	43	Female	311, Nanuoya, Pillimathalawa	• Increment of living standard of the people • Develop the sanitary facilities

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Development of the production sector and agriculture • Increase the people satisfaction
163	Yatinuwara-Urapola	Mawenella to Kandy	R.M Wijerathna	57	Male	102, Ranawana, Pillimathalawa	• Convenient transportation especially for school children • Save more time for education • Save the environment via reducing soil erosion and controlling land slide • Easy access to public important places
164	Yatinuwara-Ranawana	Mawenella to Kandy	Nilantha Gunarathana	40	Male	Nilatha morters, Nanuoya, Pillimathalawa	• Convenient transportation for employees • It is convenient for school children who walk to schools • Save money and time for transportation • Develop the sanitary facility of the area
165	Yatinuwara-Edaduwala	Mawenella to Kandy	J.Wimalasooriya	25	Female	270, Edauwawala, Peradeniya	• Easily connect with major cities • Economic development of the area • School children and working people can reach schools and offices on time • Agriculture sector development through efficient transportation
166	Yatinuwara-Edauwawela	Mawenella to Kandy	R.A.J Ranasingha	45	Female	191 B, Danasiri House, Peradeniya	• Strengthening of economic activities • Economic development of the area • Development of the agriculture sector and industrial sector • Conventional transportation • Easily reach adjacent major cities
167	Yatinuwara-Edaduwawela	Mawenella to Kandy	A.K Karunasena	40	Female	332, Colombo road, Peradeniya	• Convenient and quick to reach the main town • economic development of the area through industrial sector development • Create more new job opportunities
168	Yatinuwara	Mawenella to Kandy	E.M.S.B Nugapitiya	79	Male	Riverturn, Peradeniya	• Easy transportation for school children and working people • Development of the sanitary facilities • Empowering women through facilitate convenient transportation for their house hold products
169	Yatinuwara-Edaduwawela	Mawenella to Kandy	P.K Perera	53	Female	171 A/1/1, Tiverturn , Peradeniya	• Industrial development of the area • Create more job opportunities • Could travel even in night time • Save more time and money for education and day today activities
170	Yatinuwara-	Mawenella to	B.L.P Siripala	47	Male	172, Tiverturn,	• Economic development of the area

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Edaduwawela	Kandy				Peradeniya	• Development of living status and sanitary facilities • Save money and time and rise up the land value
171	Yatinuwara-Edauwawela	Mawenella to Kandy	D.C Ganegoda	36	Male	170 A, Tiverturn, Peradeniya	• Convenient transportation for school children and employees • Development of the sanitary facilities • Increase unity of the area • Develop the social activities among citizens
172	Yatinuwara-Edaduwawela	Mawenella to Kandy	G.P Liyanarathna	78	Female	1/318, Colombo road, Peradeniya	• Increase job opportunity through development of industrial sector • Upliftment of living standard • Help children's education • Rise up the land value
173	Yatinuwara-Edaduwawela	Mawenella to Kandy	M.M Kumarasingha	24	Male	270/B, Amukotuwaththa, Edaduwawela	• Convenient transportation for school children and working people • Increase sanitary facilities • Development of the public and private transport system • Reduce cost for hiring vehicles
174	Yatinuwara-Edaduwawela	Mawenella to Kandy	A.G Sirisena	54	Female	273/1, Adaduwawea, Peradeniya	• Convenient transportation activities • Possible transport even during night time • Empowering women through facilitate convenient transportation for their house hold products • Save money and time for transportation
175	Yatinuwara-Edaduwawela	Mawenella to Kandy	A.W.G.P.K Weerasingha	32	Female	275, Edaduwawa,Peradeniya	• Increase the living standard of the people • Increase the land value • Convenient transportation for children and elder people • Save more time for education
176	Yatinuwara-Edaduwawela	Mawenella to Kandy	A.Dharamadasa	65	Female	174/D, Tiverturn road, Peradeniya	• Easy access the major cities, schools, markets and other important places • Industrial and agricultural development of the area • More security for elders, children and child bearing ladies
177	Yatinuwara-Edaduwawela	Mawenella to Kandy	K.S Wijethunga	63	Male	174/A, Tiverturn, Peradeniya	• Development of health facilities • Possible transportation during night • Industrial and agriculture sector development • Economic development of the area
178	Yatinuwara-Edaduwawela	Mawenella to Kandy	H.M Sunil Kumara	47	Male	174/1/1, Tiverturn, Peradeniya	• Convenient transportation for school children • Save more time for education • Develop the sanitary facilities • Reduce vehicle repairs

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Economic development of the area
179	Yatinuwara-Edaduwawela	Mawenella to Kandy	H.M Kularathna	54	Female	174/a/1/1, Titerturn, Peradeniya	• Convenient transport during rainy season • Create more job opportunities through industrial sector development • Empowering women through facilitate convenient transportation for their house hold products • Rise up the land value of the area
180	Yatinuwara-Edaduwawela	Mawenella to Kandy	A.G Ranmenike	49	Female	174/B, Tiverturn , Peradeniya	• Reduce the cost for hiring vehicles • Reduce road accidents • Empowering women through facilitate convenient transportation for their house hold products

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
01	Kegalle-Abanpitiya	Warakapola to Mawenella	M.R.C Umesha	69	Female	S,K,F Perera mawatha,Amanpitiya galigamuwa	• Quick access to Galigamuwa town • Convenient transportation and reduced cost of transportation • Increases the economic condition of people • Development of the public and private transport systems
02	Kegalle-Abanpitiya	Warakapola to Mawenella	R.A Ravina	64	Female	Deldeniya, Abanpitiya, Galigamuwa	• Convenient for school children during the rainy season. • Easy access to towns such as Mawenella, Kegalle, Gampaha etc. due to the road construction • Office workers could reach their work places quicker due to reduced travel time
03	Kegalle-Abanpitiya	Warakapola to Mawenella	G.R Luvis Appuhami	62	Male	Abanpitiya, Deldeniya	• Easy transportation • Easy for business works • Convenient for school children as they can walk to school even during the rainy season.
04	Kegalle-Abanpitiya	Warakapola to Mawenella	M.G Nimalasiri	60	Male	122/1,Abanpitiya, Galigamuwa	• Easy transportation • Easy access for hospitals • Easy for community services
05	Kegalle-Abanpitiya	Warakapola to Mawenella	G.R Hemapala	66	Male	S,K,F Perera mawatha, Deldeniya	• Convenient transportation • Village development • Easy access for hospitals, pharmacy etc. • New job opportunities
06	Kegalle-Abanpitiya	Warakapola to Mawenella	T.U Ruwan Kumara	40	Male	143, Abanpitiya	• Quickeraccess to medical facilities • Easy for business activities • Saving time for transportation • Economy development
07	Kegalle-Abanpitiya	Warakapola to Mawenella	P.Malcom	48	Male		• Increased economic activities of village communities • Could maintain the road on community labor contribution basis

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
09	Kegalle-Abanpitiya	Warakapola to Mawenella	P. Malcom	34	Male	No 20, Polgahawela road, Kegale	• Development of transport facilities • Save time for transportation • Village wise development
10	Kegalle-Ranwela	Warakapola to Mawenella	J.Liyanarachchi	62	Male	108, Albet senevirathna Mawatha, Kegalle	• Easy acces to remote areas • Save time and money • Easy access to school
11	Kegalle-Ranwela	Warakapola to Mawenella	H.R Hethurathna	57	Male	98, Albet Senevirathna Mawatha, Kegalle	• Reduce the traffic jam • Easy access to school, fair, market and hospitals • Convenient for children's education • Increase the land value
12	Kegalle-Ranwela	Warakapola to Mawenella	Jayamali Fenando	60	Female	68, Polgahawela road, Ranwela, Kegalle	• Convenient and quick to reach the main town • Easy access to school, hospital and market • Save money and time
13	Kegalle-Ranwela	Warakapola to Mawenella	H.C.H.A Perera	48	Female	1/36, Polgahawela road, Kegalle	• Save time and money • Easy transportation • Easy access to public places • Increase the development rate • Reduce the accident
14	Kegalle-Kopiwaththa	Warakapola to Mawenella	Malcm Ravindra	53	Male	72, Polgahawela road, Kegalle	• Active Public transportation will be a great advantage to the community in the area. • Economy development • Easy access to town
15	Kegalle-Meepitiya	Warakapola to Mawenella	U.H Karolis	57	Male	708/4, Mee pitiya, Kegalle	• Easy to transport goods, vegetables and necessary items • Easy access to public places • Economic development • Development of living status
16	Kegalle-Meepitiya	Warakapola to Mawenella	D.A Ranasingha	70	Male	632, Meepitiya, Kegalle	• Convenient transportation • Easy access to important places • Save money and time • Easy to get government and private services
17	Kegalle-Meepitiya	Warakapola to Mawenella	S.Wijesiri	44	Male	Meepitiya, Vihara road.	• Development of agriculture sector • Development of sanitary facilities • Increase job opportunity • Development of the public and private transport systems
18	Waraapola-Abepussa	Warakapola to Mawenella	D.Vithanapathirana	40	Male	307/3, Kandy road, Abepussa, Waraapola	• Convenient transportation • Could reach cultivated land within a short time • Convenient for children's education • Patients could reach hospitals soon. • Development of agriculture sector
19	Waraapola-	Warakapola to	D.L	75	Male	309,	• Helps children's education

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Abepussa	Mawenella	Hewavitharana			Nissansala,Abepussa, Waraapola	• Convenient transportation activities • Save money and time • Possible to transport even in night time
20	Waraapola-Abepussa	Warakapola to Mawenella	K.P Jayantha	38	Male	Devala road, Abepussa	• Transportation will be more secure • Increase the living standard • Can reach other villages soon • Empowering women through development of small scale industries
21	Waraapola-Abepussa	Warakapola to Mawenella	M.P Sirisena	63	Male	Dadi gama hotel, Abepussa, Warakapola	• Easy access the major cities. • School children will benefit moreby saving time • Development of Agriculture sector
22	Waraapola-Abepussa	Warakapola to Mawenella	S.Hettiarachchi	40	Male	306, Kandy road, Warakapola	• Connectivity with other villages • Activities could be done in time and economically • Development of each and every sector
23	Waraapola-Dumamaldeniya	Warakapola to Mawenella	Chandani Jayamaha	46	Female	Bathla kotuwa , Waraapola	• Employees could reach their work places on time • Sick people could reach hospitals with conveniently • Efficient economic activities • Development of Agricultural sector
24	Waraapola-Morawaka	Warakapola to Mawenella	W.M.S Adiari	39	Female	Morawaka, Waraapola	• It is convenient for school children who walk to schools • Easy access to main cities • Empowering women through development of small scale industries
25	Waraapola-Dumamaldeniya	Warakapola to Mawenella	Nandana Kumara	60	Male	Bathala kotuwa, Waraapola	• Connect with other villages • Connection with major cities • School children can reach schools on time
26	Waraapola-Dumamaldeniya	Warakapola to Mawenella	Tilak Kumara	35	Male	339, Devale juction	• Strengthening of economic activities • Could reduce travel time • Easy access to major cities • Save money and time
27	Waraapola-Mahenegama	Warakapola to Mawenella	A.D Hendrik	45	Male	561,Mahenegama, Waraapola	• Increased public services • Economic development of the village • Easy access to town
28	Waraapola-Mahenegama	Warakapola to Mawenella	A.S.S Jayasingha	33	Male	E 40, Mahenegama, Warakapola	• Public transportation will be improved • Could reach adjoining villages soon • Easy access to school, hospitals and other public places • More security for elders, children and child bearing ladies
29	Waraapola-Mahenegama	Warakapola to Mawenella	Gurty Edirisingha	56	Female	451, Mahena, Waraapola	• Can reach main cities within a shorter period of time • Can save time for more education • Easy to access major cities • Development f production sector

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
30	Waraapola-Mahenegama	Warakapola to Mawenella	W.P Dharmathilaka	53	Female	811 E, Mahene gama, Waraapola	• Link to adjoining villages • Can reach main town easily • Easy access to school, hospitals and public places
31	Meerigama-Pasyala	Warakapola to Mawenella	M.A Saman mallawa	37	Male	112/154, Kandy road,Pasyala	• Agro economic development • Increased living conditions • Decreased transport cost • Easy access to main cities
32	Meerigama-Pasyala	Warakapola to Mawenella	R.G. Karunathilake	55-	Male	151,Kandy road, Pasyala	• Increased living condition of the people • Decreased transport cost and travel time • Area development • Agriculture sector development • Could reach major cities easily
33	Meerigama-Pasyala	Warakapola to Mawenella	H.A Nandana	-35	Male	151B, Kandy road, Pasyala	• Upliftment of agricultural sector • Increased living standards • Decreased transport cost and travel time • More security for elders, children and child bearing ladies • Easy access to important places
34	Meerigama-Pasyala	Warakapola to Mawenella	K.P.T Pathirana	58	Female	155, Colombo road, Pasyala	• Easy transportation • Easy access to major cities • Save money and time • Increased living condition
35	Meerigama-Pasyala	Warakapola to Mawenella	W.P Manjula Jeewanthi	34	Female	5/173, Diyamota kanda road, Pasyala	• Development of agricultural sector • Easy to transport goods • Save money and time • Easy access for school for school children • Development of the public and private transport system
36	Meerigama-Pasyala	Warakapola to Mawenella	H.K.W Hettiarachcchi	39	Female	7/168,Marahaha waththa, Pasyala	• Convenient transportation • Convenient for children's education • Patients could reach hospitals soon. • Easy access to major cities • Empowering women through development of small scale industries
37	Meerigama-East Pasyala	Warakapola to Mawenella	K.G Rosalin	80	Female	24C, Abilla pitiya, Pasyala	• More convenient to access to the School, Hospital, weekly fair, market, pharmacy etc. • Easy access to major cities • More accidents have been happening, therefore an expected decreased in the number of accidents in this area
38	Meerigama-East Pasyala	Warakapola to Mawenella	N.P.N.S Nawarathna	30	Male	172/4A,Nugawela waththa, Pasyala	• Development of this road will be a great service to the area. • Upliftment of living standard • Decreased transport cost

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Easy access to main cities
39	Meerigama-Nawgala	Warakapola to Mawenella	V.P Upali	59	Male	V.P Upali	• Convenient transportation • Could reach cultivated land within a short time • Convenient for children's education • Patients could reach hospitals soon. • Development of agriculture sector
40	Meerigama-Nawgala	Warakapola to Mawenella	I.D Ransingha	18	Male	Singha paya, Nawgala, Warakapola	• Could reach main road • Easy to reach town centers • Could controlled soil erosion through road development
41	Meerigama-Nawgala	Warakapola to Mawenella	K.A Kanthi	49	Female	34 mile post, Nawgala, Warakapola	• Easy to transport goods • Easy to reach schools • Shorten the transport distance • Save the travel time • Increase business facilities
42	Meerigama-Bataleeya	Warakapola to Mawenella	K.Saranapala	60	Male	No:72, Bataleeya,Pasyala	• Reduce the vehicle repair cost • Easy access to any place • Development of the area • Increase the land value
43	Meerigama-Bataleeya	Warakapola to Mawenella	Piyapala Morawaka	78	Male	87/1, Bataleeya,Pasyala	• Convenient for school children during the rainy season. • Easy access to towns such as Warakapola, Kegalle, etc. due to the road construction • Office workers could reach their work places quicker due to reduced travel time • Save money
44	Meerigama-Bataleeya	Warakapola to Mawenella	M.V Niroshini	40	Female	89/1, Bogolle road, Bataleeya, Pasyala	• Easy access to important places • Reduce the transport time • Save money and time • Upliftment of production sector
45	Meerigama-Bataleeya	Warakapola to Mawenella	W.M.K Ranasingha	42	Male	Mankanigoma, Pasyala	• Increase the land value • Upliftment of living standard • Easy access to any place • Easy to communicate with others • Increase unity f the province
46	Meerigama-Radawadunna	Warakapola to Mawenella	M.P Wijesingha	56	Male	315/D, Muruthalawa, Radawadunna	• Development of industrial sector • Increased living standards • Decreased transport cost and travel time • More security for elders, children and child bearing ladies • Easy access to important places (hospitals, school, market)
47	Meerigama-	Warakapola to	A.Rathnayake	42	Female	No 35-A,Kandy	• Increase the land value

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Radawadunna	Mawenella				road, Radawadunna	• Development of the area • Easy access to major cities • Save time and money
48	Meerigama-Radawadunna	Warakapola to Mawenella	R.P Kusumawathi	75	Female	A-9, Saman stores, Radawadunna	• Convenient transportation • Convenient for children's education • Patients could reach hospitals soon. • Easy access to major cities • Save money and time • Increase the living standards
49	Meerigama-Radawadunna	Warakapola to Mawenella	A.Swarnalatha	55	Female	No 7, Kandy road, Radawadunna	• Increase transport facilities including public transportation • Industrial development • Increase the lad value • Save money and time
50	Meerigama-Radawadunna	Warakapola to Mawenella	M.P Srima Ranjani	52	Female	4/A,Kandy road, Radamaduwa	• Easy transportation to market • Development of business sector • Easy access to major towns
51	Meerigama-Kotadeniya	Warakapola to Mawenella	D.P Somarathna	70	Male	Kotadeniya, Ella waththa, Danowita	• Development of the area • Increase the land value • Create more job opportunities
52	Meerigama-Kotadeniya	Warakapola to Mawenella	Ruwan Sanjaya	33	Male	24 A/Elle waththa, Kotadeniya	• Easy to transport goods • Easy to reach schools • Save the money and time • Increase business facilities
53	Meerigama-Kotadeniya	Warakapola to Mawenella	D.H Manjula Malkanthi	47	female	22/2, Kotadeniya, Danowita	• Create more job opportunities • Increase the unity of the people of the area • Easy access to major cities and towns • Empowering women through development of small scale industries
54	Rabukkana-Ibulgasdeniya	Warakapola to Mawenella	S.Nilanthi	41	Female	01, Kuruduwaththa, Rabukkana	• New industries will come up. • Easy access to many places • Reduce road accidents • Reduce soil erosion
55	Rabukkana-Ibulgasdeniya	Warakapola to Mawenella	A.R.M Imtiyaz	45	Male	75/1, Yatathtewa, Ibulgasdeniya	• Development of the area • Number of retail shops could be started • Increase the land value • Easy access to hospitals, school and market etc.
56	Rabukkana-Ibulgasdeniya	Warakapola to Mawenella	N.W Perera	47	Male	Gal kanda road,Yataththawa	• Enormous dust creates health problem especially for children • Increase the sanitary facility • Easy access to town

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Save money and time
57	Rabukkana-Ibulgasdeniya	Warakapola to Mawenella	S.Rohini	44	Female	Galkanda road, Yatathwala, Ibulgasdeniya	• Reduce the soil erosion • New industry will come up • Create new job opportunity • Easy access to cities
58	Rabukkana-Ibulgasdeniya	Warakapola to Mawenella	Mallika Haduwela	63	Female	Ekanayake storts, Iulgasdeniya	• Convenient transportation • Convenient for children's education • Patients could reach hospitals soon. • Easy access to major cities • Develop the area • Increase the land value
59	Galigamuwa-Bisowela	Warakapola to Mawenella	S.G Gamini Somathilaka	51	Male	G.S Stores, Abanpitiya, Galigamuwa	• Increase land value • Save money and time • Easy access to major cities • Create more job opportunities
60	Galigamuwa-Batuwaththa	Warakapola to Mawenella	Sarath Kumara	43	Male	"Isuru Niwasa", Batuwaththa, Dewalegama	• This is very much useful for school children, transport agro production, to reach paddy fields etc. • Create more job opportunities • Save money and time
61	Galigamuwa-Batuwaththa	Warakapola to Mawenella	R.L.A Chaminda Sampath	39	Male	"Rathna Sevana",Ihala Batuwaththa, Dewalegama	• Create more job opportunities • Easy access to many places • Save money and time
62	Galigamuwa-Batuwaththa	Warakapola to Mawenella	M.R.P Somarathna	62	Male	502, Polgahawela, Kegalle	• New industries will come up • Increase living standards • Save money and time • Development of the public and private transport system
63	Galigamuwa-Panakawa	Warakapola to Mawenella	R.M.K Malkanthi	46	Female	B 69/5, Panakawa, Kegalle	• Could increase land value • Convenient transportation • Easy access to cities
64	Galigamuwa-Panakawa	Warakapola to Mawenella	R.J Jayarathna	64	Male	68/01, In front of school, Panakawa road, Kegalle	• Reduce the vehicle repair cost • Development of the area • Increase the land value
65	Galigamuwa-Panakawa	Warakapola to Mawenella	Tilak Jayamaha	51	Male	182/8, Galaudahena, Kegalle	• New industries will come up • Easy access to main cities • Easy access to educational centers, medical centers and market. • Save money and time
66	Galigamuwa-Daligamuwa	Warakapola to Mawenella	H.A Ananda Senevirathna	52	Male	A-197, Adura gona, Kegalle	• Convenient transportation • Easy access to educational centers

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Economic development • Save money and time
67	Galigamuwa-Galigamuwa	Warakapola to Mawenella	Indika Namal	35	Male	Karunathissa bakery, Galigamuwa, Galigamuwa	• Create more job opportunities • Rise up the living status • Land value will be increased • Reduce the transport cost
68	Galigamuwa-Galigamuwa	Warakapola to Mawenella	A.M.N Anisha Hamine	68	Female	A 1, Abanpitiya, Galigamuwa	• Development of business sector • Economy development • Land value will rise up • Easy transportation
69	Galigamuwa-Galigamuwa	Warakapola to Mawenella	P.L.C Appuhami	76	Male	121, Galigamuwa, Galigamuwa	• Town development • Business development • Convenience transportation • Easy access to school • Easy access to business centers
70	Galigamuwa-Galigamuwa	Warakapola to Mawenella	H.P Tilakarathna	42	Male	176/3, Kadikubura, Galigamuwa	• Convenient for school children during the rainy season. • Easy access to towns • City development • Land value will rise up
71	Galigamuwa-Galigamuwa	Warakapola to Mawenella	W.Asoka	42	Male	Kadikubura, Galigamuwa	• Easy transportation • Easy for business works • Convenient for school children as they can walk to school even during the rainy season. • Economy development
72	Galigamuwa-MeFeild	Warakapola to Mawenella	H.M Tilakarathna	40	Male	Mefeild, Balla road, Galigamuwa	• Development of agricultural sector • Save money and time for transportation • Easy transportation • Easy access for hospitals, schools, banks • Easy for community services
73	Galigamuwa-Mefeild	Warakapola to Mawenella	E.P.K Saroja	65	Female	Mefeild 2, Ballapana, Galigamuwa	• Convenient transportation • Easy transportation for working people • Village development • New job opportunities
74	Galigamuwa-Mefeild	Warakapola to Mawenella	M.Weerasingha	65	Male	Mefeild, Ballapana, Galigamuwa	• Quicker access to schools, pre schools, and medical facilities • Easy for business activities and economy development • Saving time for transportation
75	Galigamuwa-Mefeild	Warakapola to Mawenella	N.S Menaka	38	Female	Mefeild, Ballapana, Galigamuwa	• Increased economic activities • Saving money for transportation • Easy access to community places

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Increase the unity of society
76	Galigamuwa-Mefeild	Warakapola to Mawenella	S.Hetteiarachchi	45	Female	"Wasana", Ballapana, Galigamuwa	• Development of transport facilities • Save time for transportation • Convenient transportation • Economic development • Village wise development
77	Galigamuwa-Adurapotha	Warakapola to Mawenella	A.Sriyani Malika	34	Female	Adurapotha, Dewale gama	• Easy access to remote areas • Save time and money • Easy access to school, market, preschool , bank and hospitals. • More security for elders, children and child bearing ladies
78	Galigamuwa-Adurapotha	Warakapola to Mawenella	B.D Graze	64	Female	390/A, Adurapotha, Kegalle	• Reduce the traffic jam • Easy access to school, fair, market and hospitals • Convenient for children's education • Business development • Agriculture sector development • Increase the land value
79	Galigamuwa-Adurapotha	Warakapola to Mawenella	C.S Bandara	35	Male	Adurapotha, Kegalle	• Convenient transportation • Convenient and quick to reach the main town • Easy access to school, hospital and market • Save money and time • Business development
80	Galigamuwa-Adurapotha	Warakapola to Mawenella	G.L Asoka	52	Male	A-188, Adurapotha, Kegalle	• Save time and money for transportation • Easy access to public places, educational centers • Increase the development rate • Reduce the accidents • Increase the unity of society
81	Galigamuwa-Adurapotha	Warakapola to Mawenella	D.M.J.J Dissanayake	35	Male	Walawaththa, Adurapotha, Dewale gama	• Upliftment of living standard of the people of the area • Easy access to any place (market, hospitals, schools) • Easy to communicate with others • More security for elders, children and child bearing ladies
82	Galigamuwa-Adurapotha-East	Warakapola to Mawenella	A.A.B.S Pushpa kumara	47	Male	391, Adurapotha, Kegalle	• Development of industrial sector and agricultural sector • Increased living standards • Decreased transport cost and travel time • Easy access to important places
83	Galigamuwa-Adurapotha	Warakapola to Mawenella	A.A.R Jayatissa	59	Male	Adurapotha, Kegalle	• Increase the land value • Economic development • Save time and money • Development of the public and private transport system
84	Galigamuwa-	Warakapola to	H.L	47	Male	Siyabalapitiya road,	• Convenient transportation

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Adurapotha	Mawenella	Jayawickrama			Adurapotha, Dewalegama	• Patients could reach hospitals soon. • Easy access to major cities • More security for elders, children and child bearing ladies • Increase the living standards
85	Galigamuwa-Adurapotha	Warakapola to Mawenella	A.Wijerathna	54	Male	Adurapotha, Deawalegama	• Increase transport facilities including public transportation • Industrial development • Increase the land value and save money and time
86	Galigamuwa-Adurapotha	Warakapola to Mawenella	J.V Chandrawathi	47	Female	Adurapotha, Devalegama	• Easy transportation to school • Economic development • Convenient transportation • Development of business sector
87	Galigamuwa-Adurapotha	Warakapola to Mawenella	H.A Geethika Kumari	29	Female	Adurapotha, Devalegama	• Development of the area • Reduce the transport cost • Reduce the hiring cost
88	Galigamuwa-Adurapotha	Warakapola to Mawenella	W.G Kusumawathi	55	Female	Adurapotha, Dewalegama	• Easy to transport goods • Easy to reach schools, preschools, and market • Save the money and time • Increase business facilities • Development of agriculture and business sector
89	Galigamuwa-Adurapotha	Warakapola to Mawenella	R.K.R Padmasiri	48	Male	“Padma”,Adurapotha, Dewalegama	• Create more job opportunities • Economy development of the area • Increase the unity of the people of the area • Easy access to major cities and towns
90	Galigamuwa-Adurapotha	Warakapola to Mawenella	Thishari Manjula	35	Female	Adurapotha, Dewalegama	• New industries will come up. • New job opportunities will create • Easy access to many public places • Development of the public and private transport system
91	Galigamuwa-Adurapotha	Warakapola to Mawenella	P.K Dharmapala	53	Male	Adurapotha, Dewalegama	• Development of the business field • Increase the land value • Easy access to hospitals, school and market etc. • Convenient transportation
92	Galigamuwa-Adurapotha	Warakapola to Mawenella	S.Jayasena	70	Male	35/42, Adurapotha, Kegalle	• Increase the sanitary facility • Easy access to major cities • Save money and time • Convenient transportation • Easy to transport goods
93	Galigamuwa-Adurapotha	Warakapola to Mawenella	S.L Gunawardhana	39	Male	164 A/3, Adurapotha, Kegalle	• New industry will come up • Develop the business sector • Create new job opportunity • Easy access to cities

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Economy development
94	Galigamuwa-Keheklwathugoda	Warakapola to Mawenella	Sunil Amarasingha	49	Male	Ehelwathu goda, Devalegama	• Convenient for children's education • Patients could reach hospitals soon. • Easy access to major cities • Empowering women through development of small scale industries • Increase the land value
95	Galigamuwa - Kehelwathugoda	Warakapola to Mawenella	Janaka Amarasekera	50	Male	Kehel wathugoda, Devalegame	• Easy access to remote areas and major towns • Save time and money • Easy access to school, market and bank.
96	Galigamuwa Kehelwathugoda -	Warakapola to Mawenella	W.G Kamalawathi	66	Female	Dewalegama, Kesel waththa	• Reduce the traffic jam • Economy development • Convenient for children's education • Increase the land value
97	Galigamuwa Kehelwathugoda -	Warakapola to Mawenella	P.B.K Gunasingha	27	Male	Keselwathugoda,Dewalegama	• Convenient and quick to reach the main cities • Easy access to school, hospital and market • Save money and time • Development of the area • Upliftment of the living standards
98	Galigamuwa Kehelwathugoda -	Warakapola to Mawenella	K.H.N Kodagoda	63	Male	Kehelwathugoda, Dewalegama	• Save time and money for transportation • Easy access to public places • Reduce the road accident • Convenient transportation for working people and students
99	Galigamuwa Kehelwathugoda -	Warakapola to Mawenella	K.H.M.P Kodagoda	54	Male	223, Kehelwathugoda, Devalegama	• Active Public transportation will be a great advantage • Economy development • Easy access to major cities • Unity development f the society
100	Galigamuwa - Batuwaththa	Warakapola to Mawenella	H.M Piyathissa	54	Female	"Rathna sevena," Batuwaththa, Devalegama	• Easy to transport goods, vegetables and other agricultural productions • Development of business sector • Economic development • Development of living status of the people in the area
101	Galigamuwa - Batuwaththa	Warakapola to Mawenella	H.Simiyon	68	Male	15/B, Ihala Batuwaththa, Dewalegama	• Easy access to educational centers • Economic development • Save money and time • Convenient transportation • Easy to transport goods
102	Galigamuwa - Bathwaththa	Warakapola to Mawenella	M.R Kumara	25	Male	Kehelwathugoda, Devalegama	• Create more job opportunities • Rise up the living status • Reduce the transport cost

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Reduce cost of hiring vehicles
103	Galigamuwa - Godapola	Warakapola to Mawenella	H.P Gunawardhana	66	Male	Wagollawaththa, Wattarama,Ibulgoda	• Development of agricultural sector and business sector • Economy development of the area • Land value will rise up
104	Galigamuwa - Godapola	Warakapola to Mawenella	P.W Seelawathi	45	Female	37/01, Wagollawaththa, Wattarama, Ibulgama	• Economy development of the area • Convenience transportation for school children and for working people • Easy access to school, market and hospitals
105	Galigamuwa - Godapola	Warakapola to Mawenella	G.R Gunasingha	53	Male	NO 40, Godaparabaddha, Ibulgasdeniya	• Convenient for school children during the rainy season. • Easy access to major cities • City development • Land value will rise up • Economy development
106	Galigamuwa - Godapola	Warakapola to Mawenella	K.T.N.W Podimenike	45	Female	A-32, Watarama, Ibulgasdeniya	• Easy for business activities • Economy development • Reduce transport cost • Development of the public and private transport system
107	Galigamuwa - Godapola	Warakapola to Mawenella	B.A Wilson	46	Male	A38/1/A, Warrarama,Ibulgasdeniya	• Save money and time for transportation • Easy access for hospitals, schools, banks • Easy for community services • More security for elders, children and child bearing ladies • Upliftment of the living standards • Increase land value
108	Galigamuwa - Godapola	Warakapola to Mawenella	D.A Dayananda	54	Male	276, Wattarama, Ibulgasdeniya	• Convenient transportation • Easy transportation for working people and school children • Create new job opportunities • Economic development
109	Galigamuwa - Godapola	Warakapola to Mawenella	R.A Dayarathna	70	Male	Wagollawaththa, Wattarama, Ibulgoda	• Quick access to schools, pre schools, and medical centers. • Economy development of the area • Saving time and money for transportation
110	Galigamuwa - Godapola	Warakapola to Mawenella	N.H Dharmasena	50	Male	Abuwengala junction, Ibulgasdeniya	• Increased the economic activities of the area • Saving money and time for transportation • Easy access to community places and increase the unity of the area More security for elders, children and child bearing ladies
111	Galigamuwa - Godapola	Warakapola to Mawenella	W.A Wayalet	68	Female	Aburangala Junction, Ibulgasdeniya	• Save time for transportation • Convenient transportation • Economic development More security for elders, children and child bearing ladies
112	Galigamuwa -	Warakapola to	I.M Gunathilaka	73	Male	Kehelwathugoda	• Easy access to remote places

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Godapola	Mawenella				dewalaya, Galigamuwa	• Save time and money • Easy access to school, market, preschool, bank and hospitals. • Economic development of the area
113	Galigamuwa - Godapola	Warakapola to Mawenella	K.P Susili	53	Female	A-15, Wararama,Ibulgasdeniya	• Easy access to school, fair, market and hospitals • Convenient for children's education • Business development • Agriculture sector development • Increase the land value • Reduce the traffic jam
114	Galigamuwa - Godapola	Warakapola to Mawenella	B.D Dharmasena.	56	Male	A-12, Watarama, Ibulgasdeniya	• Develop the business sector • Create more job opportunities • Rise up the living status
115	Galigamuwa - Godapola	Warakapola to Mawenella	S.M Kamalawathi	56	Female	361, Watarama, Ibulgasdeniya	• Economy development of the area • Land value will rise up • Easy transportation for any distance • Strengthen the people of the area
116	Galigamuwa - Godapola	Warakapola to Mawenella	A.Chira Padmini	56	Female	Habuwangala Junction, Ibulgasdeniiya	• Development of the major cities • Business development of the area • Convenience transportation • Easy access to school
117	Galigamuwa - Godapola	Warakapola to Mawenella	Soma Piyaseeli	72	Female	Wattarama, Ibulgasdeniya	• Convenient for school children during the rainy season. • Easy access to major cities • City development • Land value will rise up • Development of the agricultural sector
118	Galigamuwa - Godapola	Warakapola to Mawenella	B.H Yasawathi	58	Female	"RathnaVilla", Wattarama, Ibulgasdeniya	• Convenient for school children as they can walk to school even during the rainy season. • Economy development of the area • Create new job opportunities
119	Galigamuwa - Godapola	Warakapola to Mawenella	P.M Sumiththasiri	63	Male	A18/1, Abuwangala junction,Ibulgasdeniya	• Save money and time for transportation • Convenient transportation • Easy access for hospitals, schools, banks • Easy for community services • Strengthen the family
120	Galigamuwa - Godapola	Warakapola to Mawenella	M.M Jayasundara	70	Male	Gampaha dispensiri,Ibulgasdeniya	• Upliftment of living standard of the people of the area • Easy access to any place • Easy to communicate with others
121	Mirigama-Wewaldebniy	Nittambuwa to Warakapola	Anusha Gayan	36	Male	58/3/2, Ihalagama , Wewaldeniya	• Economic development • Increased economic activities of village communities

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	a Ihalagama						• Easy access to school, market, band and hospital • Save time and money • Development of the public and private transport system
122	Mirigama Wewaldebniy a Ihalagama -	Nittambuwa to Warakapola	M.D Nishantha	47	Male	Ihalagama, Wewaldeniya	• Create more job opportunities in business sector • Easy access to towns and major cities • Save time and money • Conveniant transportation
123	Mirigama Wewaldebniy a Ihalagama -	Nittambuwa to Warakapola	S.J.M Karunarathna	65	Male	53,Kandy road,Wewaldeniya	• Easy access to remote places • Convenient transportation for working people • Save time and money • Easy access to school
124	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	B.Premarathna	65	Male	1/49, Kandy road,Wewaldeniya	• Reduce the traffic jam in road • Convenient transportation for school children • Easy access to cities and educational centers • Development of the area
125	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	U.G Sisira Kumara	42	Male	Hallela waththa, Wewaldeniya	• Convenient and quick to reach the main town • Easy access to school, hospital and market • Save money and time
126	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	A.A.Isuru Randeel	28	Male	“Randeel stiker center”, Kandy road, Wewaldeniya	• Easy transportation for major cities • Develop the unity of area due to easy access • Save money and time • Easy access to public important places
127	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	Kapila Kumara	38	Male	94/4. Kandy road, Wewaldeniya	• Active Public transportation will be a great advantage to the community in the area. • Development of the business in the area • Development of the agricultural sector doe to easy access • Easy access to town • Create more job opportunities
128	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	G.P Wimal Jayasekara	50	Male	58/3, Ihalapara, Wewaldeniya	• Economic development • Development of living status • Increase the land value • Increase the road safety • Save money and time
129	Mirigama-Wewaldebniy a Ihalagama	Nittambuwa to Warakapola	R.A.M Rajapaksha	70	Female	Ihalagama, Wewaldeniya	• Easy access foe main cities, school, market and hospitals. • Increase the sanitary facilities • Development of the area • Save time and money • Convenient transportation for working people
130	Mirigama-Wewaldebniy	Nittambuwa to Warakapola	W.M.R Nimal Wijesingha	53	Male	115,Ihalagama, Wewaldeniya	• Development of agriculture sector and business sector • Development of sanitary facilities

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	a Ihalagama						• Create more job opportunity • Upliftment of living standard and increase land value
131	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	G.A saman Kumara	35	Male	118,Ihalagama, Wewaldeniya	• Convenient transportation for school children • Save more time for education • Save money and time • Economic development • Development of the industrial sector
132	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.R Thusitha	52	Female	76,Kandy road, Wewaldeniya	• Convenient transportation activities • Development of the public and private transport system • Save money and time • Develop the connection between outside people • Possible to transport even in night time
133	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	L.W Nandawathi	67	Female	Kandy road,Wewaldeniya	• Transportation will be more convenient for students and working people • Increase the living standard of the people in the area • Increase the land value • Create more job opportunities • Save money and time
134	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.P Prasanna	29	Male	12, Kandy road, Wewaldeniya	• Easy access the major cities and educational centers • Save money and time for transportation • Development of the industrial sector • More security for elders, children and child bearing ladies
135	Mirigama Wewaldebniya Ihalagama -	Nittambuwa to Warakapola	K.K.Upul	46	Male	128/A, Kandy road, Wewaldeniya	• Easy to communicate with other outside officers • Increment of living standard of the people • Industrial development of the area • Development of the production sector and agriculture • Increase the people satisfaction
136	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.A Padmasiri	43	Male	21,Kandy road,Wewaldeniya	• Convenient transportation • Save the environment • Control the soil erosion • Easy access to public important places
137	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	Nomesha Sampath	30	Male	83, Mulledeniya, Wewaldeniya	• It is convenient for school children who walk to schools • Convenient transportation for working people • Easy access to main cities • Save money and time • Industrial development of the area
138	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	M.P.H Gomas	53	Male	Hallale waththa,Kandy road, Wewaldeniya	• Easily connect with other outside officers • Connection with major cities • School children and working people can reach schools and offices on time

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Economic development of the area
139	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	B.Gunesekara	70	Male	51,Kandy road,Wewaldeniya	• Strengthening of economic activities • Easy access to major cities • More security for elders, children and child bearing ladies
140	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	Pradeep Chandana	36	Male	Hallela waththa, Weweldeniya	• Convenient and quick to reach the main town • Save money and time • Industrial development of the area • Land value will rise up
141	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	B.Indika Nishantha	43	Male	88/4, Kandy road, Wewaldeniya	• Easy transportation for school children and working people • Save money and time • Easy access to public places • Save more time for education
142	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.P Ananda	48	Male	29/A, Kandy road, Wewaldeniya	• Active Public transportation will be a great advantage to the community in the area. • Industrial development • Create more job opportunities • Save more time and money
143	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	P.D Anil	33	MALE	59,Ihalagama,Wewaldeniya	• Economic development of the area • Development of living status • Save money and time • Rise up the land value • Create more job opportunities
144	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	R.Premarathna	66	Female	58,Ihalagama, Wewaldeniya	• Easy access foe main cities, school, market and hospitals. • Convenient transportation for school children and officers • Easy to contact with other outside people • Increase unity of the area
145	Mirigama Wewaldebniya Ihalagama -	Nittambuwa to Warakapola	Hematha Rajapaksha	47	Male	9/6, Ihalagama, Wewaldeniya	• Development of sanitary facilities • Increase job opportunity • Industrial development of the area • Upliftment of living standard • Help children's education
146	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	N.Ananda Gamini	50	Male	112/4, Ihalagama, Wewaldeniya	• Convenient transportation • Save money and time • Increase sanitary facilities • Development of the public and private transport system
147	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	D.S.C.J.S Dissanayake	45	Male	176, Kandy road, Wewaldeniya	• Helps children's education • Convenient transportation activities • Save money and time for transportation • Possible to transport even in night time
148	Mirigama -	Nittambuwa to	K.P Susil	57	Male	117, Ihalagama,	• Transportation will be more convenient even in night

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
	Wewaldebniya Ihalagama	Warakapola	Amarasiri			Wewaldeniya	• Increase the living standard • Increase the land value • Save more time for education • Development of the industrial sector
149	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.W.G.K.P Chamila Dharshana	33	Male	122, Welegedara,Kandy road, Wewaldeniya	• Easy access the major cities, schools, markets and other important places • Save money and time • Industrial and agricultural development of the area • More security for elders, children and child bearing ladies
150	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.K.Sumanajeewa	42	Male	Infront of Muslim school, Ihalagama, Kandy road,WEwaldeniya	• Easy to communicate with other outside people • Development of the production sector and agriculture • People satisfaction • Convenient transportation
151	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	P.M Ganawathi	78	Female	84, Kandy road,Wewaldeniya	• Convenient transportation • Save the environment • More security for elders, children and child bearing ladies • Easy access to public important places
152	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	K.P Leelarathna	72	Male	Thalgaawita, Wewaldeniya	• It is convenient for school children who walk to schools • Industrial development of the area • Rise up the land value • Save money and time for transportation
153	Mirigama-Wewaldebniya Ihalagama	Nittambuwa to Warakapola	P.G Nimal Karunathilaka	40	Male	178, Ihalagama, Wewaldeniya	• Easily connect with other villages • School children can reach schools on time • Economic development of the area • Create more job opportunities • Land value will rise up
154	Mirigama-Muruthawela	Nittambuwa to Warakapola	G.M Jayasiri Perera	72	Male	20A,Muruthawewla ,Pasyala	• Strengthening of economic activities • Save money and time for transportation • Development of agricultural sector • Reduce erosion • Create more job opportunities
155	Mirigama-Muruthawela	Nittambuwa to Warakapola	H.S.L Perera	67	Male	25/1, Muruthawewla, Pasyala	• Increased public services and private transport services • Empowering women through development of small scale industries • Development of the area • Create new job opportunities • Economic development of the village
156	Mirigama - Danovita	Nittambuwa to Warakapola	Sunil Randika	50	Male	Kandy road,Danovita	• Public transportation will be improved • Reduce cost for transportation • Easy access to school, hospitals and other public places

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
							• Possible to travel even in night
156	Mirigama-Danovita	Nittambuwa to Warakapola	W.A Wansharathna	68	Male	57,Palawaththa road, Danovita	• Can save time for more education • Convenient transportation for school children • Easy to access major cities, public places • Can reach main cities within a shorter period of time • Industrial development of the area
158	Mirigama-Danovita	Nittambuwa to Warakapola	Padma Jayathilaka	65	Female	5/28, Palawaththa, Danovita	• Easy access to school, hospitals and public place • Economic development of the area • Create more job opportunities • Convenient transportation
159	Mirigama-Danovita	Nittambuwa to Warakapola	P.P.C.S Jayakody	30	Female	65/1, Kandy road, Danovita	• Increased living conditions of the people in the area • Economic development • Decreased transport cost for hiring vehicles • Easy access to main cities
160	Mirigama-Danovita	Nittambuwa to Warakapola	P.H Upali	42	Male	"Sandaruwan", Gonagaha landa, Horagasmankada, Danovita	• Agriculture and business sector development • Could reach major cities easily • save transport time • Transport will be convenient
161	Mirigama-Danovita	Nittambuwa to Warakapola	D.A Karunathilaka	57	Male	Gonnagaha landa, Horagasmankada, Danovita	• Easy transportation for school children and employees • Save more time for education • Agriculture and business sector development • Create more job opportunities
162	Mirigama-Danovita	Nittambuwa to Warakapola	M.A Anura Wijesiri	50	Male	5 mile post, Mirigama road, Danovita	• Easy access to major cities • Economic development of the area • Agriculture and business sectors development • Create more job opportunities
163	Mirigama-Danovita	Nittambuwa to Warakapola	M.N.M Naseer	40	Male	92/1, Kandy road, Dankotuwa	• Economic development of the area • Create more job opportunities • Save time for education • Convenient transportation for schoolchildren and working people
164	Mirigama-Danovita	Nittambuwa to Warakapola	B.D Dani	64	Male	77,Horagasmankada, Danovita	• Easy access to remote places and major cities • Save time and money due to efficient transportation • Easy access to school, hospital and market etc • Develop more sanitary facilities
165	Mirigama-Danovita	Nittambuwa to Warakapola	D.P.N.C Karunathilake	57	Male	31/1, Colombo road, Horagasmankada, Danovita	• Reduce the traffic jam of the area • Convenient transportation • Reduce cost for repair vehicles • Development of the area • Reduce cost for hiring vehicles

No.	DSD or GND	Road Name	Name of Respondent	Age	Sex	Address	Views
166	Mirigama-Danovita	Nittambuwa to Warakapola	KusumPathirana	57	Female	27/2, Aluth para, Kotadeniya,Danovita	• Convenient and quick to reach the main cities • Easy access to important places • Save more time for education • Economic development of the area
167	Mirigama-Danovita	Nittambuwa to Warakapola	G.R Wasantha	60	Male	Kandy road,Thalagala,Danovita	• Easy transportation for elders, school children and women • Could travel even in night time • Reduce the road accidents • Easy access to important public place
168	Mirigama-Danovita	Nittambuwa to Warakapola	W.A Josep Wijerathna	67	Male	102/A, Naranwala waththa, Danovita	• Economy development of the area • Reduce vehicle hiring cost • Easy access to major cities • Create more job opportunities
169	Mirigama-Danovita	Nittambuwa to Warakapola	Patrishiya de Silva	74	Female	82/1, Meneri waththa, Danovita	• Economic development of the area • Development of living status and sanitary facilities • Save money and time • Convenient transportation for school children, elder people and the women
170	Mirigama-Danovita	Nittambuwa to Warakapola	D.N Kumara	42	Male	32/2, Mirigama road, Danovita	• Easy access for main cities, school, market and hospitals. • Convenient transportation for school children and employees • Development of the sanitary facilities
171	Mirigama-Wewaldeniya Pahalagama	Nittambuwa to Warakapola	Dinesh Nawarathna	35	Male	104,Kandy road, Wewaldeniya	• Increase job opportunity due to facilitate new business • Upliftment of living standard • Development of sanitary facilities • Economic development of the area