

# Initial Environmental Examination

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May 2015

## IND: Rural Connectivity Investment Program – Project 3

Batch 3 Roads, Odisha

Prepared by the National Rural Road Development Authority, Government of India for the Asian Development Bank

## **CURRENCY EQUIVALENTS**

as of May 2015

Currency unit	—	Indian rupee (Rs)
Rs 1.00	=	\$ .01572
\$1.00	=	Rs 63.5981

## **ABBREVIATIONS**

ADB	—	Asian Development Bank
BIS	—	Bureau of Indian Standards
CD	—	Cross Drainage
CGWB	—	Central Ground Water Board
CO	—	Carbon Monoxide
COI	—	Corridor of Impact
DM	—	District Magistrate
EA	—	Executing Agency
EAF	—	Environment Assessment Framework
ECOP	—	Environmental Codes of Practice
EIA	—	Environmental Impact Assessment
EMAP	—	Environmental Management Action Plan
EO	—	Environmental Officer
FEO	—	Field Environmental Officer
FGD	—	Focus Group Discussion
FFA	—	Framework Financing Agreement
GOI	—	Government of India
GP	—	Gram Panchyat
GSB	—	Granular Sub Base
HA	—	Hectare
HC	—	Hydro Carbon
IA	—	Implementing Agency
IEE	—	Initial Environmental Examination
IRC	—	Indian Road Congress
LPG	—	Liquefied Petroleum Gas
MFF	—	Multi Tranche Financing Facility
MORD	—	Ministry of Rural Development
MORTH	—	Ministry of Road Transport and Highways
MOU	—	Memorandum of Understanding
NAAQS	—	National Ambient Air Quality Standards
NGO	—	Non-governmental Organisation
NOx	—	Nitrogen Oxide
NC	—	Not Connected
NRRDA	—	National Rural Road Development Agency
OSRRA	—	Odisha State Rural Road Agency
PIU	—	Project Implementation Unit
PIC	—	Project Implementation Consultants
PRIs	—	Panchyati Raj Institutions
PMGSY	—	Pradhan Mantri Gram Sadak Yojana
POL	—	Petroleum, Oil and Lubricants
PPTA	—	Project Preparation Technical Assistance
RCTRC	—	Rural Connectivity Training and Research Center
ROW	—	Right-of-Way
RPM	—	Respirable Particulate Matter

RRNMU	–	Rural Roan Network Management Unit
RRP	–	Report and Recommendation of the President
SRRDA	–	State Rural Road Development Agency
SBD	–	Standard Bidding Documents
SO <sub>2</sub>	–	Sulphur di-Oxide
SPM	–	Suspended Particulate Matter
TA	–	Technical Assistance
TOR	–	Terms of Reference
TSC	–	Technical Support Consultants
UG	–	Upgradation
WBM	–	Water Bound Macadam
ZP	–	Zilla Parisad

### **WEIGHTS AND MEASURES**

km – kilometer

m – meter

### **NOTE**

In this report, "\$" refers to US dollars.

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## **EXECUTIVE SUMMARY**

### **A. Background**

1. The Government of India (GOI) launched PMGSY in year 2000 with the objective of providing all-weather road connectivity to all rural habitations with a population of more than 500 persons in plains and 250 persons in hill states. This program is being implemented through National Rural Road Development Authority (NRRDA) under Ministry of Rural Development (MORD) at central level and through State Rural Road Development Authority/Agencies (SRRDA) at state level. The Rural Connectivity Investment Program (RCIP) is continuation of Rural Road Sector II Program (RRS IIP) and is a multi-tranche financing facility (MFF) that aims to construct or upgrade to the all-weather standard about 9,000 km of rural roads connecting around 4,800 habitations in the states of Assam, Chhattisgarh, Odisha, Madhya Pradesh and West Bengal. Under RCIP Project 1 (Loan 2881-IND) sub-projects cover about 3,530 km in total (426.43 km in Assam, 1,009 km in Chhattisgarh, 1,187 km in Madhya Pradesh, 757 km in Odisha, and 151 km in West Bengal) while the RCIP Project 2 (Loan 3065-IND) covers about 3,693 km in total (499 km in Assam, 429 km in Chhattisgarh, 654 km in Madhya Pradesh, 1,184 km in Odisha, and 930 km in West Bengal). The amount funded for the states under ADB RCIP Project 1 is approximately \$381.44 million while funding under Project 2 is about \$275 million. The subprojects are at various stages of implementation.

2. The Government is submitting the third Periodic Finance Request (PFR) to cover 787 roads with a total length of 2739.55 km spread over 21 districts in the state of Odisha. The Odisha Rural Road Development Agency (ORRDA) is the implementing agency (IA) for the ADB funded subprojects in the state. Tranche III as per classification of ADB has been categorised as 'Category B' project and therefore requires an Initial Environmental Examination (IEE).

3. These roads has been selected following PMGSY guidelines for the selection of roads under this programme and satisfy the following environmental safeguards: i) the selected road shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance; ii) the selected road shall not pass through any designated wildlife sanctuaries, national parks, notified ecological sensitive areas or area of internationally significance (e.g., protected wetland designated by the Wetland Convention); and iii) the sub projects shall only involve activities that follow Government of India laws and regulations and meets funding agency safeguard policies

### **B. Description of Project**

4. The proposal for rural road construction works typically considers a 10-12 m right of way (ROW), which includes side slopes for embankment, side drains on either side of the alignment. The roads consists both Black Top (B.T.) and Cement Concrete (C.C.) as per the ROW availability. The construction proposals are confined to the existing alignment of the unpaved tracks. The broad specifications for road alignment selection, pavement design, construction methodology, and geometric design are in accordance with the "Specification for Rural Roads" published by IRC on behalf of the Ministry of Rural Development, Government of India (GoI). The design details presented in this chapter highlights the PMGSY specifications. Minor changes will apply depending on road specific issues and design consideration. Since topography of Assam state is largely flat, the design details applicable to flat terrain.

5. The proposed rural road construction work will provide 7.5 m roadway width (this may be reduced to 6 m as per latest guidelines) with 3.75 m carriageway in accordance with the IRC-SP 20: 2002 in plain terrain. The proposal considers a 3.75 m cement concrete pavement with lined storm water drains for stretches passing through built-up areas, waterlogged/water overtopping/ flood prone areas. The pavement design considers a base layer of variable thickness as per the design with granular sub base, 150 mm thick water bound macadam (WBM grade I & II) and finally topped with 20 mm thick bituminous pavement. Adequate cross drainage structures like pipe or slab culverts/bridge structures are considered for drainage channels across the roads. Few minor bridges are also proposed to be constructed.

6. Considering the sub-grade strength, projected traffic and the design life, the pavement design for low volume PMGSY roads are proposed to be carried out as per IRC guidelines IRC: SP: 72 – 2007 or IRC SP:77 “Design of Gravel Road” and IRC SP:62-2004 “Cement Concrete roads”. In built up area for hygienic and safety reasons, C.C pavement is proposed with a hard shoulder and appropriate line drain. A design life of 10 years is considered for the purpose of pavement design of flexible and granular pavements. The embankment height considered as 1m (average) from ground to crust except at the approaches of cross drainage structures. The embankment height will vary in flood prone area as per the HFL. The design speed considered is as per recommended design speed of 50 Km/h.

### **C. Description of Environment**

7. Odisha state is located between latitude 17°49' and 22°34' N and longitude 81°27' and 87°29' E. The geographical area of the state is 1,55,707 sq km. The state is bounded by the Bay in the east, West Bengal in the north-east, Bihar in the north, Chhattisgarh in the west, and Andhra Pradesh in the south. The Tranche 3 roads of the state fall in 21 out of the 30 districts of the state and the sample roads have been selected from each of these 21 districts.

8. Standing on the coastal belt, the weather in Odisha is greatly influenced by the sea. The climate of the region is tropical resulting in very high temperature in the months of April and May. On the contrary, the Eastern Ghats of the state experience an extremely cold climate. There are three major seasons - summer (March-June), rainy season (July-September) and the winter (October-February). The average annual rainfall is about 1527 mm and annual temperature ranges between 10 C to 46 C in subproject road areas.

9. This region is the combination of several deltas of varied sizes and shapes formed by the major rivers of Odisha, such as the Subarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi, and the Rushikulya. The coastal plain of Odisha is called the "Hexadeltaic region" or the "Gift of Six Rivers". The state is rich in mineral resources including coal iron bauxite, Chromite and Nickel.

10. Most of the project area lies in vast open agricultural land and is largely free from air pollution sources other than traffic. As such, the ambient air quality (for parameters SO<sub>2</sub>, RSPM and NO<sub>x</sub>) is expected to be within the limits. However, several areas in the state have been earmarked for mining and power generation where ambient air qualities have deteriorated. The ambient noise levels are also expected to be within the National Ambient Noise Standards due to absence of any high noise sources in proposed road vicinity.

11. As per seismic hazard map of India updated by Bureau of Indian Standards, the project region falls in Zones zone-II and III (Low to Moderate damage risk zone).



12. Orissa's forests are vast. Out of the total geographical area of 155,707 km<sup>2</sup>, the State records 52,472 km<sup>2</sup> (~33%) as some version of forest. The actual forest cover may be less, according to the Forest Survey of India. The major types of forests present in the state are tropical moist deciduous type and tropical dry deciduous type. The state is also an important habitat for the endangered Olive Ridley turtles and Irrawaddy dolphins (found in coastal district of Orissa). Though, the Debrigarh wildlife sanctuary is located within district Bargarh. None of the road passes through any of the protected or reserved forests areas. None of the roads consists of any rare, endangered or threatened floral or faunal species. The project area has a medium range of flora and fauna. Small number of tree is falling within ROW.

13. The state has an overall population of 41.95 million people as of 2011 of which 34.97 million live in rural areas representing 83.31% of the total. The corresponding rate of urbanization is 15%, compared to almost 30% to India as a whole. The literacy rate in the state is 73.45% which is slightly lower than the country average (74.04%). The male literacy rate is 82.4% whereas female literacy rate is 64.36%. The economy of Orissa is primarily based on agriculture and industrial growth. The state has various industrially developed estates as well. The major industrial produce includes iron ore and steel. Industrialization is low in the subproject areas. Better communication and transport facilities may be contributory in this growth.

#### **D. Anticipated Environmental Impacts and Mitigation Measures**

14. Road improvements work brings substantial economic and social benefits to rural communities and national economies. However, it may also cause adverse environmental impacts though of smaller magnitude, since rural road subprojects are planned to follow the existing alignments and will be of 6 to 7.5 m width only. The impacts are largely expected to be during construction phase, which can be mitigated through engineering measures and adoption of best construction practices.

15. All project roads are subjected to environmental screening using the ECOP checklist. A sample size of 10% was selected by the ORRDA with support from the Project Implementation Consultant (PIC) from which this state level IEE was based. Separate environmental checklist were prepared for bridges with length greater than 50m. All sample roads included under RCIP were selected based on ecological and climate change consideration defined under EARF. Accordingly, none of the sample roads passes through protected areas or encroaches precious ecology (sensitive or protected areas) or any historical or archeologically protected areas. No forestland diversion is involved either.

16. By the 2050s, downscaled global climate models predict a general increase in temperature in Odisha with the average annual maximum and minimum temperatures expected to increase from 31.07°C to 32.82 °C and 20.18°C to 22.41°C, respectively from the 1960-1991 reference period. The GCM ensemble predicts a slight increase in annual rainfall from 1,378mm to 1,418 mm. The natural hazards that will be compounded by the projected increase in rainfall are flooding, landslide, and tsunami. The east southeastern region of the state that covers the districts of Kedrapara, Jagatsinghpur, Puri, Cuttack, Jalapur, Bhadrak, and Khordha are prone to flooding having 5-50 flooding events per 100 years. Along the Bay of Bengal on the same region The Port City of Paradwip, Kendrapara District has history of being hit by a tsunami while the entire coastline from Paradwip to Puri is at risk. To address these risks, RCIP Tranche 3 has allocated Rs 7,604 million of which Rs3,237M is for bridges and culvert construction and Rs2,340M is for increasing embankment height.

17. No land acquisition is involved due to various measures considered for finalisation of road alignment. Villagers have volunteered to donate their land if at certain stages land is required for geometrical correction or alignment adjustment for avoiding tree cutting or shifting of community structure. Debrigah Sanctuary is located in the project district Bargarh but none of the roads is located within 10 km radius. Only 1 road passes through forestland, the Talamaninaga to Uppar Maninaga road in Ranapur block of Nayagarh district.

18. Site clearing operations may have impact on common utilities, community properties, and land use. These will be avoided by limiting most of the construction activities along the alignment and strictly implementing the utility and road furniture shifting plan; ground staking of RoW; prior informed consent on vegetation clearing, tree felling with permission from Forest Department, and utility shifting; and preservation and re-use of all topsoil.

19. Impacts related to health, safety of the labourers at the construction campsites, availability of safe drinking water, sanitation, and collection, storage, and disposal of oily wastes addressed in the EMP mostly through good housekeeping and linking with local health protection programs. All construction camps and hotmix plant will be set up at least 500 m away from habitat or forest areas. The contractor will prepare appropriate traffic diversion scheme, which shall be implemented in different stretches of the road as per the progress of the construction work to avoid or minimize disturbance to existing traffic. All excavated materials from roadway, shoulders, verges, drains, cross drainage shall be used for embankments formation if feasible, filling pits, and landscaping. 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 secure landfill sites only in environmentally accepted manner. To minimize deterioration of air quality during construction the following will be implemented as part of the civil works: i) use of covered haul trucks, ii) regular sprinkling of water on active construction fronts and materials storage areas; iii) hot mix plants and diesel generating sets comply with stack height requirements and secure clearance from the State Pollution Control Board, and iv) mandatory use of PPEs to all construction workers.

20. Borrowing earth from agricultural land shall be minimised to the extent possible. Further, no earth shall be borrowed from already low-lying areas. The borrow earth shall be sourced from identified locations and with prior permission of landowner and with clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and quantity that can be borrowed. Balance cut and fill will be followed to the extent possible to minimize borrowing. Adequate provision shall be made for cross drainage structures for maintaining natural drainage pattern in the subproject area and preventing soil erosion.

21. The provision of adequate cross drainage structures shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. Road levels shall be designed considering HFL. Low costs measures like use of bamboo or eucalyptus tree will be adopted for embankment protection and control of soil erosion. Other slope stabilisation measure like vegetative protection will be installed when necessary as deemed by the PIC. None of the sample roads is crossing any natural stream except NH-55 to Siridihi (A) road in Dhenkanal district, which crosses Sarapa Nallah.

## **E. Environmental Management Plan and Institutional Arrangements**

22. Appropriate mitigation measures are identified for all rural road construction and operation activities. The identified impacts associated with rural roads and mitigative measures are largely common to most of the roads. The EMP provides action common to all roads at pre construction, construction and operation stage. Since IEE is carried out, prior to preparation of DPR, the EMP will be updated specific to road as per DPR requirements by PIU and included with DPR, which shall be available to contractor at the time of bidding.

23. The environmental monitoring program is prepared with aim to monitor the environmental performance of environmental management plan. For rural roads, Environmental Monitoring plan will be more observation oriented and it provides observation areas with frequency of monitoring at pre construction aspects construction stage and operation stage.

24. NRRDA/SRRDA has defined institutional setup including with specified responsibility for environmental management. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. The capacity enhancement is proposed through focused workshops and training session. Few workshops have already been conducted at participating states through ADB appointed Environmental specialist.

25. Grievance Redress Mechanism is also defined for receiving public concerns at state, PIU, and central level.

#### **F. Public Consultation and Information Disclosure**

26. The project has immense acceptability among the local people. They perceived that in addition to providing all weather connectivity, the sub-project road would bring positive socioeconomic changes in the area. The project has tried its best to address all the issues raised during consultations under the constraints of suitability from engineering point of view.

#### **G. Conclusion**

27. The findings of Environment Assessment of sample roads indicate that impacts are mostly similar and subprojects are unlikely to cause any significant environmental impacts. While some of the impacts are negative, there are many bearing benefits to the area. Most of the impacts are likely to occur during construction stage, are temporary in nature, and can be mitigated with minor to negligible residual impacts. The implementation of prescribed mitigation measures will minimize/avoid the adverse impacts. Moreover, the impacts shall be monitored continually by implementing and updating the Environmental Management plan and Environmental Monitoring Plan. Executing agency shall ensure that updated road specific EMP forms part of DPR and is available to contractor at the time of bidding. The contractor will specify the quantity and budget for various activities like rehabilitation of borrow earth pits, first aid and sanitation facilities at construction camp and temporary office/material storage place as per EMP requirements. The same shall be revised if there is any change in the project design. Any such change shall be reported to ADB as well.

28. Any major changes or any major additional work other than the proposed project activities will require updation of ECOPs and IEE. The updated ECOPs and IEE will have to be submitted to NRRDA and ADB for concurrence before civil works commence.



## I. INTRODUCTION

### A. Project Background

1. Pradhan Mantri Gram Sadak Yojana (PMGSY) aims to provide all-weather road connectivity to currently unserved habitations in India's rural areas, where 70% of the population live. The Government of India (GOI) launched the "Pradhan Mantri Gram Sadak Yojna" (PMGSY)<sup>1</sup> in year 2000. The objective of PMGSY is to provide all-weather road connectivity to all rural habitations with a population of more than 500 persons in plains and 250 persons in hill states. The National Rural Road Development Authority (NRRDA) is implementing the Project under Ministry of Rural Development (MORD) at central level and through State Rural Road Development Authority/Agencies (SRRDA) at state level<sup>2</sup>.

2. The Rural Connectivity Investment Program (RCIP) is a continuation of the Rural Road Sector II Program (RRS IIP) and is a multi-tranche financing facility (MFF) that will construct or upgrade to the all-weather standard about 9,000 km of rural roads connecting around 4,800 habitations in the states of Assam, Chhattisgarh, Orissa, Madhya Pradesh, and West Bengal (collectively called RCIP states). RCIP will also improve the institutional arrangements and business processes through capacity building of the SRRDAs. The project will enhance capacities related to design, operation, safeguard, financial, road safety, and asset management matters. Investments in rural roads will improve connectivity and cut transport costs by providing improved connectivity between habitations, markets, and urban towns.

3. RCIP Tranche 1 financed part of the cost of: (i) construction of 3,461 km of rural roads in the five project states, (ii) consultancy services, and (iii) capacity building of implementing agencies by establishing rural connectivity training and research centers (RCTRCs) and rural roads network management units (RRNMUs). The Loan for Tranche 1 (Loan 2881-IND) totalling \$252 million was signed in April 2013 and became effective on 5 June 2013. RCIP Tranche 2 (Loan 3065-IND) totaling \$275 million was approved on 25 November 2013. Until May 2014 Tranche 1 has awarded 515 out of 532 or about 97% of the total contracts while for RCIP Tranche II has 498 out of 716 or about 70%.

4. The Government is submitting the third Periodic Finance Request (PFR) to cover 2,739.55 km of rural roads in the state of Odisha. The Odisha State Rural Road Development Agency (OSRRDA) is the implementing agency (IA) for the ADB funded subprojects in the state. Tranche III as per classification of ADB has been categorised as 'Category B' project and therefore requires an Initial Environmental Examination (IEE).

5. This IEE report was prepared by M/s Operations Research Group (P) Ltd., the Technical Support Consultants (TSC) appointed by National Rural Road Development Agency (NRRDA) under the ADB loan assistance.

### B. Project Roads Identification and Location

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<sup>1</sup> Prime Minister's Rural Road Program

<sup>2</sup> Odisha State Rural Road Development Authority

6. PMGSY has prepared specific guidelines for the selection of roads to be eligible under this programme. The key requirements is that any road will be eligible for construction or up-gradation only if it is part of the Core Network<sup>3</sup> and satisfy the following environmental criterion:

- The selected road shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
- The selected shall not pass through any designated wildlife sanctuaries, national parks, notified ecological sensitive areas or area of internationally significance (e.g., protected wetland designated by the Wetland Convention);
- The sub projects shall only involve activities that follow Government of India laws and regulations and meets funding agency safeguard policies.

7. The Government is submitting the third Periodic Finance Request (PFR) to cover 2,566.86 kms in the state of Odisha. The Odisha State Rural Road Agency (OSRRA) is the implementing agency (IA) for the ADB funded subproject in the state. Tranche III as per classification of ADB has been categorized as environment Category B and therefore requires an initial environmental examination (IEE).

8. The 2,566.86 km of roads comprises 749 different stretches spread over in 26 districts of the State. Within each district, the roads are further scattered in several blocks and sub-divisions. The longest road is 21.30 km PWD road to Ankuli (GP) Reach-II from 11/60 to 32/900, Patrapur block, Ganjam district), while RD road to Nuaguda with 0.50 km length in Tentulikhunti block of Nawrangpur district is the shortest. The average length of roads works out to 3.42 km. The list of 2,566.86 km roads with location and length is given in Appendix 1.

### **C. Rural Road Construction Proposal**

9. The proposed rural road construction works typically considers a 10-12 m right of way (RoW), which includes side slopes for embankment, side drains on either side of the alignment. However, as per the recent NRRDA guidelines a RoW of 6 m has been considered for roads having an average traffic flow of 100 vehicles per day. The roads consists both black top (B.T.) and cement concrete (C.C.) as per the ROW availability.

10. The proposed road upgrading and construction activities are confined in the existing alignment of the unpaved tracks. Majority of these are foot/pathways traditionally used by the villagers and transformed into the present form of unpaved tracks/roads through minor construction works taken up by the communities, local bodies and state Government over the decades.

### **D. ADB Safeguard Policies and Category of the Project**

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<sup>3</sup> Core Network is that minimal network of roads (routes) that is essential to provide access to essential social and economic services to all eligible habitations in the selected areas through at least single all-weather road connectivity. A core network comprises of through routes and link routes. Through routes are the ones, which collect traffic from several link roads or a long chain of habitations and lead it to marketing centres either directly or through the higher category roads i.e., the district roads or the state or national highways. Link routes are the roads connecting a single habitation or a group of habitations to through routes or district roads leading to market centres. Link routes generally have dead ends terminating on a habitation, while through routes arise from the confluence of two or more link routes and emerge on to a major road or to a market centre

11. The Asian Development Bank has defined its safeguard requirements under its *Safeguard Policy Statement 2009 (SPS 2009)* requiring environmental assessment, mitigation, and commitment towards environmental protection. The prime objectives of these safeguard policies are to: (i) avoid adverse impacts of projects on the environment and affected people, where possible; and (ii) minimize, mitigate, or compensate adverse project impacts on the environment and affected people when avoidance is not possible. The ADB *SPS 2009* classify a project into category A, B or C depending on potential environmental impacts.

12. All environmentally sensitive components along each subproject road are assessed to define the magnitude and extent of likely impacts. Selection criteria require none of the roads pass through or near any protected areas, archeologically important monument, and reserved forests. There are 233 roads passing through forest area and permission from Forest Department are being obtained. No MOEF clearance is required. Few tree cutting is allowed provided they are not protected or endangered species. The road primarily passes through agricultural and residential areas. Most of the roads follow existing alignment and land acquisition is minimal. The RCIP Tranche III for the state of Odisha is classified as environmental category B based on ADB SPS 2009.

## **E. Objectives and Approach for Environmental Assessment**

13. The prime objectives of the environmental assessment is to identify likely environmental impacts during design, construction, and operation stages of each rural road and formulate cost effective mitigation and monitoring measures and institutional mechanism for effective implementation of recommended measures.

14. Since there is large number of subproject roads involved under RCIP and magnitude of each road is small, preparation of individual IEE's for each road is inappropriate. ADB has prepared an Environmental Code of Practices (ECOP) checklist under Rural Road Sector (RRS) Project II that was modified for RCIP. The ECOP is a distillation of the lessons learned in managing environmental impacts from past rural road projects. Each subproject was subjected to rapid environmental screening guided by the ECOP checklist. Sample ECOP checklist with annexures on tree, utility and community structures, strip maps and photographs for each selected sample road are provided in Appendix 2.

15. The findings from the ECOP Checklist from the sample projects provide the basis to prepare state-level IEE reports and EMP. The EMP is generic and forms part of the bidding documents to guide the project implementation consultant (PIC) and project implementation unit (PIU) prepare road specific EMPs provided in the detailed project reports (DPRs).

## **F. IEE Methodology and Content**

16. The state specific IEE was structured based on *ADB SPS, 2009* and *ADB's Environmental Assessment Guidelines (2003)*. The IEE reports including EMPs, and monitoring plans, cover the most environmentally sensitive components in state as well as specific to subproject roads.

- **Corridor of Impact:** The direct area of influence or the corridor of impact (COI) has been considered as 10 m on either side of the proposed sample roads alignment Based on the proposed cross-section.

- **Field Visits, Primary and Secondary Data Collection:** A total of 10% of the nominated roads were selected to comprise the sample population where the environmental examination is to be conducted. Each sample road was visited by PIC along with concerned PIU officials for environmental assessment. Individual road specific strip map was prepared during the field visit to capture the information related to tree inventory, utility and community structures located along the proposed road alignment, surface water bodies, and ecological sensitivities. Secondary environmental information pertaining to the environmental issues, protected area, forests areas were collected from various government and non-governmental / research institutions for assessment of the baseline environment of the project locations, district and state as a whole.
- **Data Analysis, Impact identification and Mitigation Measures:** Information collected were analysed and impacts identified. Mitigation measures were proposed common to larger roads and specific to the roads. EMP is prepared considering mitigation measures and institutional framework of SRRDA.

17. The IEE report includes following seven chapters including this introduction Chapter.
- Chapter 1- Introduction
  - Chapter 2- Description of Project
  - Chapter 3- Description of Environment
  - Chapter 4- Anticipated Impacts and Mitigation Measures
  - Chapter 5- Institutional Requirement and Environmental Monitoring Plan
  - Chapter 6- Public Consultation and Information Disclosure
  - Chapter 7- Conclusion and Recommendation

## **G. Legal Framework and Legislative Requirements**

18. India has well defined institutional and legislative framework. The legislation covers all components of environment viz air, water, soil, terrestrial and aquatic flora and fauna, natural resources, and sensitive habitats. India is also signatory to various international conventions and protocols.

19. As per Environment (Protection) Act, 1986; the Environmental Impact Assessment Notification, 2006; amended in 2009 defines the environmental impact assessment for development projects. All new or expansion of national and state highways requires environmental impact assessment and environmental clearance from central or state level Environmental Appraisal Authority. However, rural road projects proposed under RCIP do not require environmental assessment or clearance based on the Notification and instead the mainstream environmental concerns specific procedures that were formulated under Rural Connectivity Investment Program (RCIP) will be implemented.

20. New road construction or road improvement work attract many legislation including the diversion of forest land, tree cutting, opening of new quarry, establishment of temporary workshops, construction camps, hot mix plants, and use of vehicles for construction. The legislation applicable for RCIP roads are listed below:



**Table 1: Applicable Environmental<sup>4</sup> Laws and Regulations to RCIP Road**

Sl. No.	Legislation	Applicability
1.	Forests (Conservation) Act 1980 (Amended 1988), and Forest (Conservation) Rules, 1981, (Amended 2003)	As per above Act/Rules <i>Forest Clearance</i> from Department of Forests/Ministry of Environment and Forests Govt. of India is required for diversion of forest land (if any) for non-forest purpose. Prior permission is required from forests department to carry out any work within the forest areas and felling of roadside trees. Cutting of trees need to be compensated by through afforestation as per permission condition.
2.	The Water (Prevention and Control of Pollution) Act 1972 (Amended 1988), and the Water (Prevention and Control of Pollution) Rules, 1974	Placement of hot-mix plants, quarrying and crushers, batch mixing plants, discharge of sewage from construction camps requires <i>No Objection Certificate (Consent to Establish and Consent to Operate)</i> from State Pollution Control Board prior to start of construction or setting up specific facility. <i>Authorisation</i> will also be required for disposal of Hazardous Waste like waste oil etc. from State Pollution Control Board
3.	The Air (Prevention and Control of Pollution) Act, 1981, (Amended 1987), and the Air (Prevention and Control of Pollution) Rules, 1982	
4.	The Noise Pollution (Regulation and Control) Rules, 2000 (Amended 2002)	
5.	The Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008 (Amended 2009), and the Batteries (Management and Handling) Rule, 2001	
6.	Guidelines for Ground Water Extraction Prescribed by Central Ground Water Authority under the power granted under Environment (Protection) Act 1986	Permission from Central Ground Water Authority (CGWA) is required for extracting ground water for construction purposes, from declared as Semi-critical, Critical and Overexploited areas from ground water potential prospective. For NOC, An application in the prescribed Performa is to be submitted either to the Office of the Regional Director, (CGWB) of the concerned state, or to Member Secretary, CGWA, New Delhi
7	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and Workmen Compensation Act	Fixing hours for normal working day, weekly paid rest, overtime pay, basic welfare and amenities, temporary living accommodation on-site, PPEs, penalties for violation, and liability of employers in workmen injuries arising from employment.

21. The PMGSY Scheme and Guidelines (2004) No. 12025/8/2001-RC, Ministry of Rural Development (MORD) also defines environmental requirements in road selection and regulatory compliance.

<sup>44</sup> PMGSY Roads are not covered by the EIA Notification. As all eligible roads under the RCIP are prohibited from entering wildlife protected areas and sanctuaries, no permit under the Wildlife Act is needed.

## II. DESCRIPTION OF THE PROJECT

### A. General

22. The PMGSY program has mandate to provide all-weather roads to all the rural habitations within the country. RCIP is planned to meet above objective. Under RCIP tranche 3 in Odisha, about 2,566.86 km of roads have been identified for implementation under RCIP. The broad specification for road alignment selection, payment design, construction methodology, geometric design etc. are same and is as per the "Specification for Rural Roads" published by IRC on behalf of the Ministry of Rural Development, Government of India. The design details presented in this chapter are as per above specifications. Minor changes will apply depending on road specific issues and design consideration.

23. Since topography of Odisha state is largely flat, the design details applicable to flat terrain are presented in following section.

### B. Sample Roads Selected in Odisha State

24. The Odisha state has selected 787 roads with a total length of 2739.55 km spread over 21 districts as summarized at Table 2 below and detailed at Appendix 1.

**Table 2 : Summary of District Wise Proposed Rural Roads- Tranche 3**

S. No	Name of District	No. of Pkgs.	No. of Roads	Length of Roads (Km)			
				Total	Max	Min	Average
1	Balasoe	18	21	61.33	5.60	0.70	2.92
2	Bhadrak	21	23	86.90	6.50	1.50	3.78
3	Bolangir	45	80	207.75	7.40	1.00	2.60
4	Cuttack	6	12	64.14	9.00	3.22	5.35
5	Deogarh	9	11	50.32	9.93	2.20	4.57
6	Ganjam	48	66	307.91	21.30	0.70	4.67
7	Jagatsinghpur	17	17	59.80	10.10	1.30	3.52
8	Jajpur	14	14	55.57	7.50	0.75	3.97
9	Kalahandi	20	31	109.25	9.09	1.29	3.52
10	Kendrapara	15	15	76.48	12.00	2.00	5.10
11	Keonjhar	57	57	230.41	12.20	1.50	4.04
12	Khurda	12	18	46.55	4.00	1.50	2.59
13	Koraput	76	76	261.21	11.00	0.85	3.44
14	Mayurbhanj	48	59	204.97	8.50	1.00	3.47
15	Nawrangpur	17	29	88.93	11.90	0.50	3.07
16	Nuapada	38	40	156.30	10.00	1.30	3.91
17	Phulbani	13	13	97.34	13.50	2.00	7.49
18	Puri	66	82	187.46	7.00	0.70	2.29
19	Sambalpur	28	28	70.65	5.28	0.71	2.52
20	Sonepur	59	76	245.35	10.00	1.20	3.23
21	Sundargarh	16	19	71.98	8.10	1.10	3.60
<b>Total</b>		<b>643</b>	<b>787</b>	<b>2739.55</b>	<b>21.30</b>	<b>0.50</b>	<b>3.48</b>

### C. Project Description

#### 1. Rural Road Construction Proposals

25. The proposed rural road construction work will provide 3.75 to 7.5 m roadway width<sup>5</sup> with 3.75 m carriageway in accordance with the Indian Road Congress (IRC) -SP 20: 2002 in plain terrain. The proposal considers a 3.75 m cement concrete pavement with lined storm water drains for stretches passing through built-up areas, waterlogged, water overtopping, and flood prone areas. The pavement design considers a base layer of variable thickness design with granular sub-base, 150 mm thick water bound macadam (WBM grade I and II) and finally topped with 20 mm thick bituminous pavement. Adequate cross drainage structures like pipe or slab culverts/bridge structures are considered for drainage channels across the roads. Few minor bridges are also proposed for construction. Figure 1 shows the typical cross section of the rural roads.

26. The rural road construction works will be in conformance with the Rural Roads Manual and Technical Specifications (IRC: SP20: 2002) for Rural Roads published by IRC on behalf of Ministry of Rural Development, Government of India. The broad design considerations are given at later part of this chapter.

## **2. Present Condition**

27. The project roads mainly pass through plain or riverine terrain and agricultural area. The project roads have several cross drainage structure, electric post and telephone post along the existing alignment. There are some community physical structures like temple, mosque, primary, or secondary schools beside the roads alignment, but will not be affected due to the widening of roads. There are some utilities besides the roads. Some of these may need to be shifted. There are 233 roads passing through forest area (Appendix 2) but are already having movement paths so land acquisition is not required still permission from the forest department has been obtained/being obtained. Permission granted are conditional need to be strictly followed.

## **3. Alignment and Profile**

28. The existing road is generally an earthen track with some stretches of brickbat soling and the project road is considered as new connectivity road. The construction works are to be confined to the existing alignment. The existing horizontal and vertical alignment / profile will be generally maintained except for minor smoothing or corrections to sustain consistent design speed without causing any land acquisition requirements and thereby the possible social and/or environmental concerns.

## **4. Design Considerations**

29. **Geometrical Design and ROW Requirements:** The geometric design standards for this project will conform to PMGSY-ADB guidelines and the guidelines as stated in *IRC-SP 20:2002* and the final recommendations of NRRDA expert committee (*refer D.O. no. - 17305/1/2007-Tech/12 dated 30/09/2010*). Recommended design standards vis-à-vis the standards followed for this road are described below. The requirement of ROW as per PMGSY guidelines considered for the design is given at Table 3 below:

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<sup>5</sup> The road width may be reduced to 6m in case of BT and 3.75 m in case of CC as per PMGSY recent guideline.

**Table 3: ROW Requirement**

Road classification	Plain and Rolling Terrain (ROW in m)			
	Open Area		Built-up Area	
	Width	Range	Width	Range
Rural roads (ODR and VR)	15	15-25	6.0	6.0

ODR: Other District Road; VR: Village Road

30. Since terrain is plain, the design speed considered is as per recommended design speed of 50 Km/h for ruling with 40 km/h as minimum speed. The radius of horizontal curve is considered as 90 m ruling minimum (60m absolute minimum). The vertical alignment is designed as per ruling gradient of 3.3% applicable for plain terrain.

31. **Pavement and Embankment Design:** Considering the sub-grade strength, projected traffic and the design life, the pavement design for low volume PMGSY roads are proposed to be carried out as per guidelines of IRC: SP: 72 – 2007 or IRC SP:77 “Design of Gravel Road” and IRC SP:62-2004 “Cement Concrete Roads”. In built-up area for hygienic and safety reasons, C.C pavement is proposed with a hard shoulder and appropriate line drain. A design life of 10 years is considered for the purpose of pavement design of flexible and granular pavements. The embankment height considered as 1m (average) from ground to crust except at the approaches of cross drainage structures. The embankment height will vary in flood prone area as per the HFL.

32. **Road side drain:** As the insufficient drainage of surface water leads to rapid damage of road, road side drain (Figure 1) are provided on the locations of habitation areas with concrete pavement. The rainwater will flow along the longitudinal slope and intermittent gaps in concrete curbs.

33. **Carriageway:** The carriageway is proposed as 3.75 m as per IRC-SP20: 2002 but may be restricted to 3.0 m where traffic intensity is less than 100 motorised vehicles per day and where the traffic is not likely to increase due to situation, like dead-end, low-habitation and difficult terrain condition. The ROW requirement in built-up/constricted area may be even reduced to 4 m.

34. **Shoulder:** Earthen shoulder shall be constructed in layers and compacted to 100% of Proctor's Density. It is proposed to have 1.875 m wide shoulder (0.875 m hard shoulder and 1 m earthen shoulder) on either side of carriage way.

35. **Surfacing:** Slow setting bitumen emulsion will be applied as primer on water bound layer. Rapid setting bituminous emulsion will be used for tack coat. Pre-mixed carpet 20 mm thick and mixed with equivalent viscosity grade bitumen shall be laid as surfacing course, 6 mm thick, Type B seal coat is considered for sealing of the premixed carpet.

36. **Structural Works:** Following grades of concrete are proposed for structural works as per specified MORD and IRC specifications:

- Concrete in superstructure of slab culvert – M-25 (RCC)
- Concrete in abutment cap, dirt wall of slab culverts – M-25 (PCC)
- Brickwork in abutment, return wall, headwall – cement mortar (1:4)
- Concrete below abutment, return wall, headwall – M-10 (PCC)
- Concrete in pavement (on carriageway) – M-30 (PCC)
- Concrete in pavement (on shoulder and drain) – M-25 (PCC)

## 5. Construction Methods

37. For rural roads NRRDA has framed specific guidelines for cost effective construction of these rural roads preferring manual means. Motor grader and tractor-towed rotavator are used for handling of bulk materials like spreading of aggregates in sub-base and base courses by mix-in-place method. Ordinary smooth-wheeled roller is used for compaction if the thickness of the compacted layer does not exceed 100 mm. It is also considered that hot mix plant of medium type and capacity with separate dryer arrangement for aggregate is used for bituminous surfacing work that can be easily shifted. A self-propelled or towed bitumen pressure sprayer is used for spraying the materials in narrow strips with a pressure hand sprayer. For structural works, concrete is mixed in a mechanical mixer fitted with water measuring device. Excavation is manually or mechanically using suitable medium size excavators.

## 6. Available Right of Way

38. As per the information available with ARRDA, right-of-way (ROW) is largely available for the rural roads. However, in most of the roads, the required ROW of 10-15 m is encroached and in some of the road, it is put to agricultural use by the adjacent landowners. The private landowners along the proposed (ROW) are voluntarily parting the encroached land and in some cases parted even their own private land without any compensation, anticipating the developmental benefits from the road construction works.

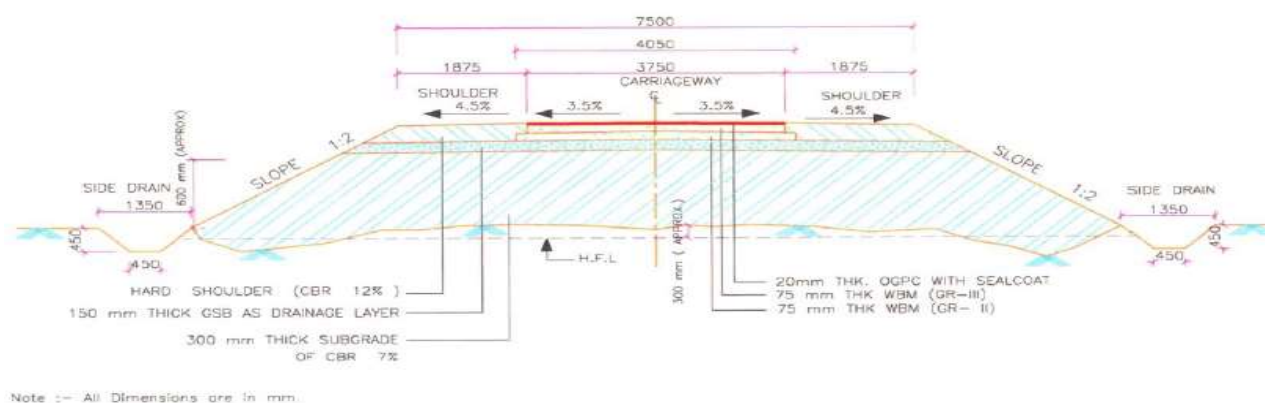
## 7. Traffic

39. The present traffic data on each of these rural roads typically varies between 10-15 vehicles per day on most of the rural stretches. The traffic largely comprises motorcycles, tractors, light commercial vehicles, animal drawn carts and bicycles.

## 8. Economic Assessment

40. The economic analysis carried out for the project has indicated that the rural road construction works will act as a catalyst for the rural economic growth and poverty alleviation of the community in the region.

**Figure 1: Cross-section of Rural Roads**



### III. DESCRIPTION OF THE ENVIRONMENT

#### A. Background

41. Baseline environmental conditions about all facets of environment viz. physical, biological and socio-economic were established using primary and secondary sources. Efforts to collect the latest information both at regional as well as local level especially along the project corridor were made to allow better prediction of likely changes in the environment due to the project and will serve as performance indicators for various components.

42. The project roads are located almost all over the state covering 18 out of the 27 districts. The baseline information at the state level and road-specific environmental salient features are provided in this chapter.

43. Odisha state is located between latitude 17°49' and 22°34' N and longitude 81°27' and 87°29' E. The geographical area of the state is 1,55,707 sq km. The state is bounded by the Bay in the east, West Bengal in the north-east, Bihar in the north, Chhattisgarh in the west, and Andhra Pradesh in the south. The Tranche 3 roads of the state fall in 21 out of the 30 districts of the state and the sample roads have been selected from each of these 21 districts. In total, 81 sample roads have been selected that comprise 10% of the roads proposed. List of the sample roads is provided below:

**Table 4: List of Sample Roads for Initial Environmental Examination, RCIP Tranche III, Odisha**

District	Block	Package No	Code	Road Name	Length (Km)
Balasore	Balasore	OR-02-ADB-87/TIII	L 079	PWD Road- Kuradiha	2
	Simulia	OR-02-ADB-91/TIII	L-036	Dadhibamanpur to Parameswarapur	3.5
Bhadrak	Tihidi	OR-04-ADB-35/TIII	L-30	Barsar to Madhupur	5
	Basudavpur	OR-04-ADB-47/TIII	L-50	(B) T2 to Purusotampur	1.5
Bolangir	Bolangir	OR-05-ADB-75/TIII	L-77	Bhudimuhan to Santenpali (Road-c)	2.3
	Deogaon	OR-05-ADB-76/TIII	L-21	PWD Road to Jamjharan	4.5
	Bolangir	OR-05-ADB-75/TIII	L-78	SH-42 to Bedtenlenpali (Road-A)	3.33
	Bolangir	OR-05-ADB-74/TIII	L-29	Baxiundar to Dhobaudar (Road-B)	2.5
	Titilagarh	OR-05-ADB-107/TIII	L-071	Sireikela-Goudtola RD Road to Goidabari	0.6
	Titilagarh	OR-05-ADB-106/TIII	L-032	MDR-40 to Thalka	2.22
	Bangomunda	OR-05-ADB-103/TIII	L-066	Dangia to Bagbahal	2.4
	Bangomunda	OR-05-ADB-104/TIII	L-070	Khira to Deogaon	5
Cuttack	Narsinghpur	OR-07-ADB-40/TIII	L-81	Nuagarh to Bhuska	3.8
Deogarh	Barkote	OR-08-ADB-09/TIII	L-26	Saida to Rugudakudar	5.45
Ganjam	Bhanjanagar	OR-11-ADB-40/TIII	L-051	Dhumakumpa to Akhupadar	3.8
	Bhanjanagar	OR-11-ADB-45/TIII	L-026	Kathachira to Kumbhipalli	5
	Bhanjanagar	OR-11-ADB-35/TIII	L-031	PWD Road to Boribandha	2
	Khallikote	OR-11-ADB-65/TIII	L-61	Badapalli to Badabola	2.2
	Sorada	OR-11-ADB-32/TIII	L-034	Nuagam to Binjigiri	4.1
	Sorada	OR-11-ADB-32/TIII	L-042	Sunakhandi to Sandhipiplapanka	2.5

District	Block	Package No	Code	Road Name	Length (Km)
	Sorada	OR-11-ADB-36/TIII	L-061	RD Road (Mayangi) to Dhepapalli	13.2
Jagatsinghpur	Tirtol	OR-12-ADB-29/TIII	L-043	Badjanga to Rankei	2.7
	Tirtol	OR-12-ADB-39/TIII	L-031	Nuapokhari to Dianpur	1.7
Jajpur	Korei	OR-13-ADB-20/TIII	L-33	N.H.- 5a To Badatrilochanpur	0.75
	Dharmasala	OR-13-ADB-32/TIII	L029	R & B road to Majhipatna	2.85
Kalahandi	Koksara	OR-15-ADB-113/TIII	L- 40	Soniapada To Ladugaon	6.03
	Koksara	OR-15-ADB-112/TIII	L- 66	Bhursaguda To Malpada (Road - B)	2
	Koksara	OR-15-ADB-114/TIII	L-39	Ampani To Kar lakhutiapada	4.8
Kendrapara	Rajnagar	OR-16-ADB-33/TIII	L-35	Santhapada To Chakibanka Road	8
	Rajnagar	OR-16-ADB-41/TIII	L-44	Mahulia To Pokharia Road	2.5
Keonjhar	Keonjhar	OR-17-ADB-07/TIII	L-47	Khajuripani-Kumudabahal road	2.82
	Keonjhar	OR-17-ADB-14/TIII	L-69	Kusumita to Upper Kampdihi road	3.85
	Keonjhar	OR-17-ADB-12/TIII	L-40	N.H.6 to Mahuldiha road	2.85
	Telkoi	OR-17-ADB-53/TIII	L-67	PWD Road- Ramachandrapur	2
	Telkoi	OR-17-ADB-54/TIII	L-61	PWD Road – Lokanathpur	1.5
	Telkoi	OR-17-ADB-59/TIII	L-31	Kaliahata- Karangapal	5.15
Khurda	Bolagarh	OR-18-ADB-29/TIII	L-26	RD road to Ekadalia	2.11
	Balianta	OR-18-ADB-32/TIII	L-26	Balipatna RD road to Hotsahi	2.4
Koraput	Koraput	OR-19-ADB-65/TIII	L-072	N.H-43 To Chapsil Road	1.85
	Koraput	OR-19-ADB-69/TIII	L-024	P.W.D Road To Ambagam	2.7
	Koraput	OR-19-ADB-83/TIII	L-075	N.H-43 To Panasput Road	4.6
	Semiliguda	OR-19-ADB-99/TIII	33	Sorisapadar(NH-26) to Bhitarkota	11
	Semiliguda	OR-19-ADB-103/TIII	61	Bilaput to Bhitarsubai	1
	Semiliguda	OR-19-ADB-108/TIII	34	Malimarla to Uppergelaguda	1.5
	Semiliguda	OR-19-ADB-117/TIII	78	NH-43 (26) to Daleiguda	6
	Semiliguda	OR-19-ADB-118/TIII	77	NH-43 (26) to Bileiguda	2.8
Mayurbhanj	Moroda	OR-21-ADB-06/TIII	L-052	PWD Road to Idor	3
	Bangiriposi	OR-21-ADB-11/TIII	L-43	RD road to Kundalabani	5.6
	Bangiriposi	OR-21-ADB-14/TIII	L-65	Ghatkuanri to Domuhani	1.1
	Bangiriposi	OR-21-ADB-14/TIII	L-82	MDR-45 to Jamdapal	1.1
	Rairangpur	OR-21-ADB-46/TIII	L- 30	Badgaon to Rehedakocha (N)	2.4
	Rairangpur	OR-21-ADB-46/TIII	L- 49	Gorumahisani to Gidighaty(N)	3.3
Nawrangpur	Papadahandi	OR-22-ADB-102/TIII	L-031	Miriguda to Dakribeda	3.5
	Nowrangpur	OR-22-ADB-93/TIII	L-021	RD Road to Sonuguda	2.7
	Nowrangpur	OR-22-ADB-93/TIII	L-050	RD Road to Kochiaguda	1.55
Nuapada	Nuapada	OR-24-ADB-35/TIII	L-62	SH-3 Sunsunia to Dehenpara	3.9
	Nuapada	OR-24-ADB-36/TIII	L-46	RD Road to Bhalukana	2
	Nuapada	OR-24-ADB-37/TIII	L-22	Amodi to Tamkidadar(Road-A)	1.6

District	Block	Package No	Code	Road Name	Length (Km)
	Khariar	OR-24-ADB-52/TIII	L-28	NH-217 to Sandibahali	1.6
Phulbani	Khajuripada	OR-25-ADB-11/TIII	L-44	Nediguda to Gundribadi	2
Puri	Astaranga	OR-26-ADB-132/TIII	L-29	L-28 to Osihan	2.1
	Astaranga	OR-26-ADB-133/TIII	L-45	Manduki to Olara	2.65
	Astaranga	OR-26-ADB-134/TIII	L-23	L-23 to Olihan	1.8
	Astaranga	OR-26-ADB-126/TIII	L-61	Edbansa to Paikhala	1.9
	Kanas	OR-26-ADB-83/TIII	L-60	N.J. Sadak to Balipada-A	2.4
	Pipili	OR-26-ADB-91/TIII	L-53	N.H.203 to Potal	1.86
	Pipili	OR-26-ADB-95/TIII	L-68	T-6 to Raigurupur	1
	Puri	OR-26-ADB-105/TIII	L-63	N.J. Sadak to Karadi	1.8
Sambalpur	Jujumura	OR-28-ADB-57/TIII	L-25	Dhalpal to Laida	1.62
	Maneswar	OR-28-ADB-62/TIII	L-47	PWD Road to Saradhapali	1.08
	Maneswar	OR-28-ADB-66/TIII	L-28	PWD Road to Jampali	0.71
Sonepur	Dunguripali	OR-29-ADB-34/TIII	L-40	Sunapali Chhak to Chamarpur	3.5
	Binika	OR-29-ADB-37/TIII	L-54	Gulunda (RD Road) to Piteipali	2
	Dunguripali	OR-29-ADB-38/TIII	L-22	PWD Road to Katapali	3
	Tarava	OR-29-ADB-60/TIII	L-57	Sargaj Arda Road to Jamkani	2
	Dunguripali	OR-29-ADB-62/TIII	L-26	Badkarley to Amamunda	5.3
	Dunguripali	OR-29-ADB-63/TIII	L-28	Sahajbahal Canal Road to Kulthipali	2.6
	Dunguripali	OR-29-ADB-77/TIII	L-57	NH201 to Sargul	1.9
	Binika	OR-29-ADB-71/TIII	L-41	Baunsuni to Bhikabahali	3.85
Sundargarh	Sundargarh	OR-30-ADB-157/TIII	L026	Majhapada to Aunlajore Via Chandilipada	2.5
	Sundargarh	OR-30-ADB-148/TIII	L030	Karla to Sahupara	3.55
<b>Total</b>					<b>246.83</b>

44. Summary key environmental features of the project districts are given in Table 5.

## B. Physical Environment

### 1. Meteorology and Climate

45. Standing on the coastal belt, the weather in Odisha is greatly influenced by the sea. The climate of the region is tropical resulting in very high temperature in the months of April and May. On the contrary, the Eastern Ghats of the state experience an extremely cold climate.

46. There are three major seasons - summer (March-June), rainy season (July-September) and the winter (October-February). It is warm almost throughout the year in the western districts of Sambalpur, Bolangir, Kalahandi, and Mayurbhanj (maximum temperature between 40-46°C). In the coastal districts, the climate is equable but highly humid and sticky. The summer maximum temperature ranges between 35-40°C and the low temperatures are usually between 12-14°C. Winter is not very severe except in some areas in Koraput and Phulbani where minimum temperature may drop to 3-4°C.

47. The state receives most of its rainfall from the southwest monsoon between mid-June to early October. A few pre-monsoon showers during April to mid-June and few during the winter



months from the retreating northeast monsoon are not infrequent in the state. But most of the precipitation is confined to the four months from July to October. Consequently, many parts of Odisha are hit by severe drought. The maximum and minimum rainfall is in the neighbourhood of 1,800 mm and 1,000 mm respectively; the average is about 1,500 mm. Cyclonic storms, due to depression in Bay of Bengal, sometimes of devastating magnitude followed by heavy rains occur in the months of September, October and November. On the average there are about 60 to 70 rainy days in a year.

48. **Rainfall:** The rainfall in the project districts range between 1,082 mm to 1,527 mm, out of which more than 80% is received between June to September.

49. **Relative Humidity:** Normally, May to October months are humid and January to April are dry. The relative humidity in project districts range between 15 to 92%.

**Table 5: Summary Key Environmental Features of the Project Districts**

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
Balasore	Balasore is situated between 20.48 - 21.59°N degree north latitude, and between 86.16 degree and 87.29 degree east longitude Balasore has a geographical area of 3,706 sq kms.	The climate is generally hot with high humidity and precipitation. May is the hottest and December is the coolest month. The highest maximum temperature recorded was 44 degree Celsius on June 8, 1998. The average annual rainfall is between 1,550 to 1,600 mm	Kuldhia Sanctuary	Balasore can be divided into three geographical regions, namely the coastal belt, the inner alluvial plain and the North-Western Hills that are part of the Eastern Ghats. The district has an average altitude of 19.08 metres, with the hills of Nilagiri having the highest peak at 1783 feet.	The major rivers are Subarnarekha, Budhabalanga, Jalaka, Kansabansa, and Sono	The major soils are clay loam, sandy clay loam and sandy loam. A small strip of saline soil is also witnessed in the coastal part of the district	Paddy, ground nut, mung, biri, maize, mango, citrus, papaya, pineapple <sup>8</sup>	Traffic noise in Balasore Town. Sea Turtle Nesting Protection.
Bhadrak	District is bounded by Balasore District on the north, Jajpur District and river Baitarani on the south, Keonjhar District on the west and Bay of Bengal and Kendrapada District are on the east. It is located at 21.0667 Latitude	The climate of this District is generally hot and humid with May being the hottest month. December is the coldest month with monsoon generally arriving during the month of June. The rainfall during June to October constitutes at least 75 Percent of the actual rainfall of this District.	The total forest area in 60.12 sq kms, i.e. 3.96 sq kms of demarcated protected forests, 32.98 sq kms of un-demarcated forests besides other forests. However, there are no reserved forests area	The average altitude of the district is 13 metres	A number of deltaic rivers, viz: Salandi, Baitarani, Kansabansa, Gamol, Mantei, Genguti, Kochila, Reba and Kapali pass through and around the district	Bhadrak has saline, alluvial and sandy soil, with salt tracks found along the coast and arable tracts in the inner precincts of the district	Both Kharif and Rabi crop are grown here. However, Paddy is the principal crop, followed by pulses, vegetables and oilseeds	District has very good forest cover and potential risk of tree clearing for new road construction or expansion

<sup>6</sup> <http://odishawildlife.org/protectedarea.html>. Wildlife Conservation in Odisha. Forest and Environment Department

<sup>7</sup> [http://odisha.gov.in/e-magazine/Orissareview/nov2005/engpdf/Soil\\_of\\_Orissa\\_and\\_Its\\_Management.pdf](http://odisha.gov.in/e-magazine/Orissareview/nov2005/engpdf/Soil_of_Orissa_and_Its_Management.pdf)

<sup>8</sup> <http://agricoop.nic.in/Agriculture%20Contingency%20Plan/Orissa/Orissa%2027-%20Balasore%2031.05.2011.pdf>. Department of Agriculture and Cooperative. Ministry of Agriculture

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	and 86.5000 Longitude. The Bhadrak District covers an area of 1,721 Sq. Km.with geographical area of 2,46,529 has.							
Bolangir	The District is surrounded by Subarnapur district in east, Nuapada District in the west, Kalahandi District in the south and Bargarh District in the north. The District lies between 20°11'40 to 21° 05'08 N latitude and 82°41'15 to 83° 40'22 E longitude. The District covers an area of 6575 sq.km.	Minimum temperature measured in the District is 16.6 ° C and maximum is 48.7 ° C. 1215.6 mm average rainfall is experienced in Bolangir District. The district enjoys a temperate climate. Winters are cold, while summers are hot and humid. The District is prone to cyclonic rainfalls during the monsoons. The maximum temperature is 38 ° C and minimum temperature is C. The average rainfall measured in the District is 1765.1mm.	Numerous reserved forests	Red and yellow, Red and Black, Brown and Forest Laterite Soil. Stretch falling in Bolangir district is predominantly underlain by black cotton soil. In the block sections of Lakholi – Mahanadi-Kharia Road, Lateritic soil is present due to proximity to Mahanadi River and many other natural drains in this area.	The district forms a part of the Mahanadi River basin. Other important rivers of the district are the Maltijor, the Harrad, the Kulsara, the Bheden, and the Phuljharan.	The predominant soil groups found in the Balangir District are red, mixed red, black and alluvial soils.	Paddy is the principal crop, accounting for 61 % of gross cropped area. Other important crops grown in the district are pulses, followed by oil seeds, fibre and other food crops like spices and condiments etc	Deforestation
Cuttack	This city takes pride in the fact that it had been	The District experiences tropical climate,	Cuttack has Reserve Forests of 522.39 sq kms,	Fluvial from the Mahalik River	Cuttack city is flanked by Mahanadi river	The soil is very fertile and is of medium black	Cuttack district has principal	Poor air quality near ferro alloy and power

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	the capital of Odisha before shifting to Bhubaneswar, the new capital. Geographically, it is located at a latitude of 20 degree 03 to 20 degree 40 N and a longitude of 84 degree 58" to 86 degree 20 E. Cuttack city is flanked by Mahanadi river on the north and Kathajodi river on the south. Covering a geographical area of 3932 sq kms.	with the summer being hot and the winter cold. The maximum temperature that this District experiences is well above 40 degree Celsius (during summer) and the minimum is as low as 10 deg C (during winter). Summer generally lasts from March to June and winter, from October to February. Rainfall is generally heavy during the monsoons, which occur during the months of July and August. The average rainfall received is around 1892.55 mm in the District. South West monsoon is primarily responsible for the rainfall.	Demarcated Protected Forests of 102.60 sq km, unclassified forests of 0.45 sq km and other category of forests of 163.65 sq kms		on the north and Kathajodi river on the south and Brahmani. Kuakhai, Devi, Kushabhadra and many small offshoots of Mahanadi .	alluvial type	Kharif season with secondary Rabi season. Rice, pulses, oil seeds, jute, sugarcane, coconut and turmeric are the major crops grown here.	generating plants in Choudwar area.
Deogarh	Deogarh District, also known as Debagarh District, was newly created on 1.1.1994, being bifurcated from Sambalpur	Deogarh District experiences hot summer from the month of March to May, heavy monsoon from June to September and winter from the	None	Godwana landmass composed mainly of granite, gneiss, charnokite, khonalite, and dharwarian rocks.	Mahanadi River	Red, yellow, and black soils having medium fertility	Rice, cotton, sweet potato, onion	Deforestation

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	District. The District is surrounded by Angul District on its east and south, Sambalpur District on its west and Sundargarh District on its north. The District covering a geographical area of 2940 Sq Km, is located between 21 degree 31' 53" North Latitude and 84 degree 43' 2" East Longitude.	month of October to February. The average annual rainfall of the District is 1142.3 mm. The maximum temperature of the District is 43 degree C and minimum temperature is 8°C						
Ganjam	Located on the boarder of Andhra Pradesh, Ganjam District came into existence on 1st April 1936. Ganjam District is on 19.4 to 20.17 degree north latitude and 84.7 to 85.12 degree east longitude. It covers an area of 8,070.60 sq km. The district is broadly	The climate of Ganjam is characterized by an equable temperature round the year, particularly in the coastal regions. The District's cold season from December to February is followed by hot season from March to May. The District experiences normal annual rainfall of 1,444 mms.	Chandaka-Damapara Sanctuary,  Lakheri-Valley Wildlife Sanctuary, Chilka Lake	Khondalite, charnockites, granites	Rushikulya and Bahuda Rivers	The District is well known for its fertile soil and agricultural productivity.	A large variety of crops are grown here like Paddy, Ground nut, Sugar cane, Oil seeds, Ragi, Mung, Biri etc.	Managament of coastal area

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	divided into two divisions, the coastal plain area in the east and hill and table lands in the west. The eastern ghats run along the western side of the District.							
Jagatsinghpur	Jagatsinghpur district is surrounded by Bay of Bengal in the East, Cuttack district in the West, Kendrapada district in the North and Puri district in the South. It is the smallest district of Odisha with ageographical area of 759 sq km,	East and South eastern Coastal plain with hot and humid climates having average annual normal rainfall of 1501.3 mm.	Pradip Sea Turtle Nesting	Deltaic alluvial and coastal saline.	Mahanadi, Paika, Devi Rivers	mostly loam, sandy loam and clay loam	The Major food crop grown in Jagatsinghpur District is paddy. Sugarcane, turmeric and cotton are the major commercial crops	Sea Turtle Protection in Paradip
Jajpur	The Jajpur District came into being on 1st April 1993. Prior to that it was part of Cuttack District which divided into four Districts. The District is	The climate of Jajpur District is normal as per Indian standards. All the seasons arrive in the District at their usual time. The District's average height from the sea level	Dharma Mahakal Temple, Ratnagiri. Jagannath Temple, Jajpur Town. Trilochaneswar Temple, Jajpur Town. Varahanatha Temple, Jajpur Town. Buddhist site		Baitarani and Brahmani Rivers.	Deltaic Aluvial	District is having the third best conditions for sustainable development in agriculture followed by	Archeological sites

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	bounded by Keonjhar and Bhadrak Districts on its North, Cuttack on its South, Dhenkanal District on its East and Kendrapada District on its West. The Jaipur District located in between 20 degree 30' to 21 degree 10' North Latitude and 85 degree 40' to 86 degree 44' East Longitude. The District covering an area of 2,887.69 sq km	is 331 mts and its average rain fall is 1,014.5 mm. The average maximum and minimum temperatures are 38 degree C and 12 degree C respectively. Overall, the climate of the District is neither hotter nor cooler.	(excavated), Udaigiri. Ancient Buddhist Site, Langudi Hill, Mauza Panimuhani, Fazilpur & Salipur.				Bargarh and Jagatsinghpur Districts. Rice is traditionally grown in two well defined seasons, namely kharif and dalua. Of these two, kharif (rainy) is the most important rice season. The kharif rice is the main crop, covering over 85 percent of the total rice area, and depends entirely on the southwest monsoon. It is sown in June and harvested in October–December, depending upon the duration of the cultivation and	

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							topography of the field. The dalua (summer) crop coincides with the dry season and depends entirely on irrigation. The source of irrigation water is tank. The dalua season stretches from December–January to April–May. Farmers grow only high–yielding varieties during this season.	
Kalahandi	Kalahandi District has derived its name from “Gudahandi Caves”. Kalahandi District covering a geographical area of 7920 sq km lies in between 19.3 to	The climate of the Kalahandi District is of extreme type. It is dry except during monsoon. The maximum temperature of the District is 45 degree C, whereas the minimum temperature	Forest based products like Mahua, Kendu leaf, Wood, Timber and Bamboos also contribute to local economy largely.	(i) Hilly in the south-eastern and southern part (953 to 1929 above MSL) and (ii) Undulating plains Ampani-Koksara Junagarh and Bhawanipatnaa-Utkala- Kesinga tracts ranging in elevation from 350 to 186m	Vanshadhara, Indravati, and Tel Rivers	Red and black soil	The District is rich with agriculture. Dharamgarh sub division was historical known for rice production in Odisha.	Aluminum mining



Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	21.5 N Latitude and 82.20 to 83.47 E Longitude. The District occupies the South Western portion of Odisha, bordered to the North by the Balangir District and Nuapada District, to the South by the Nabarangpur District, Koraput District and Rayagada District, and to the East by the Rayagada, Kandhamal District and Boudh District.	recorded is 11 degree C. The District experiences the average annual rainfall as 1378.20 mm. The monsoon starts late in June and generally lasts upto September.		above MSL.			Since 2000s the Indravati Water Project, second biggest in the state has changed the landscape of southern Kalahandi, leading to two crops in a year. Because of this, blocks like Kalampur, Jaipatna, DharRayagada, Kandhamal District and Boudh District.	
Kendrapara	Kendrapara District is situated in Central Coastal plain zone of Odisha. The District is bounded by Bhadrak District at its North, Jagatsinghpur District at its South, Cuttack District at its	Kendrapara District has a moderate climate. The temperature in the region can go up to 34 degree C in Summer while in Winter the temperature can drop to 13 degree C. The normal rainfall measured in the District is 15101.3 mm.	Bitarakhanika National Park		Bhramani River	Deltaic alluvial, coastal saline and alluvial soil	Rice, groundnut, green gram, black gram and jute are the main crops grown in the District. However, frequent occurrence of natural calamities	Flooding

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	West and Bay of Bengal at its East. Kendrapad District lies in 20 degree 20' N to 20 degree 37' N Latitude and 86 degree 14' E to 87 degree 01' E Longitude. The Coastline of Kendrapara District covers 48 Km stretching from Dhamra Muhan to Batighar.						viz cyclone, flood and drought has broken the backbone of the people . In order to survive under these conditions, people go for cultivation of their staple food crop rice during rabi in the assured irrigated areas. Jute is the main cash crop of the District, grown since long. Groundnut is an important oil seed crop of the District. Coconut is the important horticulture crop in Kendrapara District.	
Keonjhar	The Keonjhar District emerged as one of the	The climate of Keonjhar District is characterized by an			Baitarani, Brahmani, Salani Rivers	Laterite and red soils	The major crops grown in the	

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	District on 1st January, 1948. The District is bounded by Mayurbhanj District and Bhadrak District to the east, Jajpur District to the south, Dhenkanal District and Sundargarh District to the west and West Singhbhum district of Jharkhand State to the north. Covering a geographical area of 8240 sq kms, the Keonjhar District lies between 21° 1' N to 22° 10' N latitude and 85° 11' E to 86° 22' E longitude.	oppressively hot summer with high humidity. Summer generally commences in the month of March. Temperature begins to rise rapidly attaining the maximum in the month of May. During the summer, maximum temperature touches around 38° C. The weather becomes more pleasant with the advent of the monsoon in June and remains as such up to the end of October. The temperature in the month of December is lowest i.e. it hovers at around 11° C. Sometimes it even drops down to as low as 7° C. The average annual rainfall is around 1534.5 mms.					Keonjhar District are Paddy, Maize, Til, Niger, Arhar etc.	
Khurda	The District Khordha came in to existence on 1st April 1993, by dividing it off its earlier Puri	The district enjoys normal 1408mm with maximum and temperature 42.2 degree Celsius and 11.1 degree	Nalaban Sanctuary	Khordha into two district sub-regions one is Deltaic Alluvium sub-region which comprises of 3 blocks Baliana,	Principal rivers are Kuakhai, Bhargabi, Budunai, Daya, Kushabhadra, Malaguni, rana	Laterite, coastal saline and alluvial soil	Both Kharif and Rabi crop are grown here	

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	district. Puri was divided into three districts Puri, Khordha and Nayagarh. The geographic location of khordha district stands at 19degree 55minutes to 20 degree 25minutes North Latitude and 84 degree 55minutes to 86 degree to 5minutes East Longitude. Its bioclimatology is much influenced for the short radial distance from the Bay of Bengal and presences of a huge water body like the Chilika Lake	Celsius respectively. Similarly, the mean relative Humidity ranges from 46% to 89% .		Balipatna and Chilika Whereas Banpur, Begunia. Bhubaneswar, Bolagarh, Jatni, Khordha & Tangi belong to Lateritic sub-region.	and Kusumi			
Koraput	The Koraput District lies at 17.4 degree to 20.7 degree North latitude and 81.24 degree to 84.2 degree east longitude. The District is bounded by	Koraput District experiences minimum 12.0 celsius and maximum 38.0 celsius temperature. The District experiences mainly three seasons i.e summer, winter and			Kolab River	Red soil	The suitability of soil and climatic condition for production of coffee, cashew, cotton, tobacco, vegetable	

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	Rayagada in the east, Bastar District of Chhatisgarh in the west and Nabarangpur District in the south. The Koraput District covers an area of 8379 sq km. The District has got 2 sub divisions namely Koraput and Jeypore. There are total 14 Tahsils, 14 Blocks, only one Municipality, 3 NACs, 23 Police stations, 2028 Villages and 226 Gram Panchayats functioning in the District of Koraput.	rainy. Summer occurs from April to June, Rainy season is from June to October and Winter is from November to March. Winter season in Koraput District is longer than other parts of Odisha. The average rainfall in the District is measured to be 1522mm(Average) rainfall.					and fruits and the production of these crops strengthen the economy of the Koraput District. The common annual food crops grown in the District are paddy, millet, maize and pulses.	
Mayurbhanj	Mayurbhanj is a land locked district with a total geographical area of 10418 Sq.km. and is situated in the Northern boundary of the state with district headquarters at	The district comes under "North Central Plateau agro-climatic region with an average rainfall of 1648.20 mm per annum. Being away from the coastal belt, the district experiences a sub-tropical climate with a hot	Hadgarh Sanctuary	The district has a rich mineral base and is home to the Similipal Biosphere. Iron-ore (hematite), vanadiferous and titaniferous magnetic, chaina clay, galena (lead ore), Kyanite, asbestos, steatite (soap stone) and quartzite constitute	Subernarekha, Burhbabalanga, Jambira, Baitarani Rivers	Red-laterite category of soil dominates all over the district including Bamanghati and Panchpir plateau.		

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	Baripada. The district is bounded in the North-East by Midnapure district of West Bengal, Singhbhum district of Jharkhand in the North-west, Baleswar district in the South-East and by Kendujhar in the South-West.	summer, chilling winter with good precipitation.		the principal mineral resources of Mayurbhanj district, of these the iron-ore deposits of Gorumahisani, Badampahar and Suleipat, which have been exploited for a period of about half a century, deserve special mention.				
Nawrangpur	. Its boundary stretches in the north to Raipur and west to Bastar Districts of Chhatisgarh. The east side of Nabarangpur touches Kalahandi and Rayagada Districts and south to the Koraput Districts of Orissa. The river Indravati forms the border between Nabarangpur and Koraput Districts. Nabarangpur District covers an area of 5294				Indravati River	Red soil		

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	sq km. The District has a vast area of 1583.4 sq km covered by forests. It is situated at 20.3 to 17.5 Degree North latitude and 81.27 to 84.1 East longitudes.							
Nuapada	The District is located in the western part of Odisha. It lies between 20 degree N and 21 degree 5' latitude and 82 degree 40' E longitude. The boundaries of Nuapada extends in the north, west and south to Raipur District of Chattishgarh and in the east to Bargarh, Balangir and Kalahandi Districts of Odisha. This district is spread over in an area of 3407.5 square K.m.	The plains of Nuapada subdivision fringed by rugged hill ranges stretch southward, which belong to the main line of the Eastern Ghats and contains extensive plateaus of about 4000 ft (1200 m) in elevation with long tropical grass grown over them. They contain mineral deposits such as laterite, graphite and bauxite.	<p>Sunapada Sanctuary.</p> <p>The hill sides rising up precipitously from the plains are covered with dense sal forests. The forests of the District are managed under Forest Division named as Khariar Division. According to the composition of forests in the District, it can be classified into Sal forests, Teak forests, miscellaneous forests. There are other forest species such as Teak and Bamboo. All these are situated in the dry deciduous forest zone. Timber is by far the major forest</p>		Indra River	Red and black soils		

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			products and Sal is no doubt, a major constituent of these products. Other important species of Nuapada forests, are Bija, Asan, Bandhan.					
Phulbani (Kandhamal I)	Kandhamal revenue district came into existence on 1st January, 1994, after Phulbani District was divided into Kandhamal and Boudh Districts of Odisha. Kandhamal District is located in central Odisha and is bounded by Boudh District on the north, Rayagada District on the south, Ganjam and Nayagarh Districts on the East and Kalahandi District on the west. This District is located between 19°34' & 20°36' north latitude and 83°34' & 84°34' east longitude	Kandhamal experiences sub tropical hot and dry climate in summer. Dry and cold climate in winter. The maximum temperature recorded in the District is 45.5 degree C and minimum temperature is 2.0 degree C. The average annual rainfall recorded is 1522.95 mm. The Kandhamal district covering a geographical area of 7654 sq kms is bounded by Boudh district in the North, by Rayagada district in the South, by Ganjam and Nayagarh districts in the East and Kalahandi District in the west.	Almost 66 percent of the land area of the District is covered with dense forests and towering mountains rich in green meadows at the attitude of 2000 feet to 3000 feet		Rushikulya and Vansadhrara Rivers	Brown Forest Soild		



Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	and covers an area of 7654 sq.km.							
Puri	Puri lies between 19.28 degree north to 26.35 degree north latitude, and from 84.29 degree east to 86.25 degree east longitude Puri has an area of 3051 sq kms Puri has only one subdivision	Climate is humid with temperatures ranging between 14 degree to 37 degree Celsius throughout the year mm		The whole district is divided into two dissimilar topographical terrains, viz: the Littoral Tract, and the Level Alluvial Tract, along with sea coast bays and islands	The Principal rivers are Kushabhadra, Daya, Bhargabi, Kadua and Prachi.	Black, laterite, deltaic, coastal saline, and alluvial soils	Both Kharif and Rabi crop are grown here	
Sambalpur	Sambalpur district lies between 20° 40' N and 22° 11' N latitude, 82° 39' E and 85° 15' E longitude with a total area of 6,702 Sq. Kms. The district is surrounded by Deogarh district in the east, Bargarh and Jharsuguda districts in the west, Sundergarh district in the north and Subarnpur and Angul districts in	Sambalpur district experiences extreme type of climate with 153 centimeters rainfall on an average per annum. Most of the rainfall is confined to the months from June to October Mercury rises upto 47° celcius during May with intolerable heat wave and falls as low as 11.8° celcius during December with extreme cold.	The district has a total forest area of 3986.27 Sq. Kms. which is 59.46% of the total area of the district.	The district has three distinctive physiographic units such as, Hilly Terrain of Bamra and Kuchinda in the north, plateau and ridges of Rairakhol in the south-east and valley and plains of Sambalpur Sub-division in the south east. Sambalpur district forms a part of North-West upland of Odisha, which is rolling and multiplying the ground slopes from a height of 776 ft. to a height of 460 ft.	Brahmani	The thick blanket of black cotton soil all over the district has been made somewhat sticky by the yellow earth developing in the undulating topography of the district.	Total land under cultivation in the district is 173540 hectares. Paddy is the principle crop	

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	the South.							
Sundargarh	Sundargarh District was constituted on the 1st January, 1948, out of the two ex-States of Gangpur and Bonai, which merged with Odisha on that day. True to its name, this beautiful District of Sundargarh with about 43 percent of its total area under forest cover and numerous colourful tribes dotting its landscape and with abundant mining potential is bounded by Ranchi District of Jharkhand on the North, Raigarh District of Chhatisgarh on the west and North West, Jharsuguda, Sambalpur and Angul Districts of Odisha on the South and South East and Singhbhum	The climate of this District is characterized by extremely hot summers and cool winters. Climate is hot & moist sub humid. Normal rainfall of the District is approximately 1230 mm, but there is a deviation in receipt of rainfall pattern which is influencing crop production.			Brahmani, Sankh, Koel and IB are the major rivers flowing through this District.			

Districts	Location	Climate	Ecologically Sensitive Area (Wildlife Sanctuaries / National Park etc) <sup>6</sup>	Geomorphology (Major Physiographic Units and land use)	Major Drainage	Major Soil Type <sup>7</sup>	Principal Crops	Key Environmental Issues
	<p>District of Jharkhand and Keonjhar District of Odisha on the east.</p> <p>District is located between latitude 21 degree 36' N to 22 degree 32' N and longitude 83 degree 32' E to 85 degree 22' E. Covering a geographical area of 9712 sq.kms, Sundargarh District is the second largest District of the state, accounting for 6.23 percent of its total area. Out of this total area, forests cover 4232.57 sq km,</p>							

## 2. Air Quality

50. Most of the project area lies in vast open agricultural land and is largely free from air pollution sources other than traffic and few brick-kilns existing in the area.

51. These were located in open area and operate only for few months. As such, the ambient air quality for major pollutants like SO<sub>2</sub>, SPM and NO<sub>2</sub> is expected to be within the limits. However, in absence of any existing data on ambient air quality levels of the project area, secondary sources were referred to fulfill this requirement:

**Table 6: Ambient Air Quality**

	SO <sub>2</sub> (µg/m <sub>3</sub> )	NO <sub>2</sub> (µg/m <sub>3</sub> )	RSPM (µg/m <sub>3</sub> )
Industrial	14	24	34
Residential	8	23	61
NAAQS	80	80	100

Source: National Ambient Air Quality Status, 2008, CPCB and Table III.3.

52. The above reveals that the concentration of all the pollutants well within the limits (NAAQS). A comparison of the pollutant concentration levels in different years is given in Table 7. The table gives higher suspended particulate matter levels, which are attributed to the vehicular movement on unpaved roads and the loose dust in the agricultural fields that lead to formation of dust clouds over short periods.

53. However, several areas in the state have been earmarked for mining and power generation where ambient air qualities have deteriorated, these are: Rajgangpur Area (Iron & Steel, Sponge Iron, Cement, Secondary steel. Melting and rolling mill & refractories and chemicals), Ib valley area (Thermal power, Sponge iron, refractories, and coal mines), Hirakud area (Aluminum & rolling mills), Talcher-Angul area (Thermal power, Aluminum, Coal washeries, Ferro alloys, Coal mines), Choudwar area (Ferro alloys, Thermal power, pulp and paper, coke oven), Balasore area (pulp and paper, ferro alloys, rubber industries), Chandikhol (stone crusher, coke oven), Duburi (Integrated steel, ferro alloys, rubber industries), Paradeep area (fertilizer, sea food processing, petroleum coke), Khurda Tapang area (stone crusher), Joda Barbil area (iron, sponge iron, ferro alloys, iron ore crusher, mineral processing), and Rayagada area (pulp and paper, ferro alloys). From the Environmental Information System (ENVIS) Center of Odisha State of Environment, SPM, SO<sub>2</sub>, and NO<sub>x</sub> concentrations have been increasing in 4 monitoring stations, namely: Talcher Thermal Power Plant, Angul Township, Nayagada, and NALCO.

## 3. Noise

54. Along the proposed roads construction proposals, there are no significant industrial activity nor significant vehicular traffic contributing to ambient noise levels. The occasional vehicular movement on the unpaved roads contributes to increased noise levels over short duration limited to daytime. The existing roads do not appear to have vehicular traffic in the night time. Therefore, the ambient noise levels are expected to be within the National Ambient Noise Standards.

## 4. Topography and Geomorphology

55. Odisha is located between the parallels of 17.49'N and 22.34'N latitudes and meridians of 81°.27'E and 87°.29'E longitudes. It is bounded by the Bay of Bengal on the east, Chhattisgarh on the west and Andhra Pradesh on the south. It has a coastline of about 450 kms. It extends over an area of 155,707 sq km. according to the 1991 census. This region is the combination of several deltas of varied sizes and shapes formed by the major rivers of Odisha, such as the Subarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi, and the Rushikulya. Therefore, the coastal plain of Odisha is called the "Hexadeltaic region" or the "Gift of Six Rivers". It stretches along the coast of the Bay of Bengal having the maximum width in the Middle Coastal Plain (the Mahanadi Delta), narrow in the Northern Coastal Plain (Balasore Plain) and narrowest in the Southern Coastal Plain (Ganjam Plain). The North Coastal Plain comprises the deltas of the Subarnarekha and the Budhabalanga rivers and bears evidences of marine transgressions. The Middle Coastal Plain comprises the compound deltas of the Baitarani, Brahmani and Mahanadi rivers and bears evidences of past 'back bays' and present lakes. The South Coastal Plain comprises the lacustrine Plain of Chilika Lake and the smaller delta of the Rushikulya River. The plateaus are mostly eroded plateaus forming the western slopes of the Eastern Ghats with elevation varying from 305-610 metres. There are two broad plateaus in Odisha: (i) the Panposh - Keonjhar -Pallahara plateau comprises the Upper Baitarani catchment basin, and (ii) the Nabrangpur -Jeypore plateau comprises the Sabari basin.

56. The project districts fall under the rolling upland category and include a number of erosional plains and river basin of Mahanadi presenting an upland plain.

**Table 7 : Ambient Air Quality Status of Odisha in Previous Years**

City	Location	Type of Area	SO2			NO2			RSPM (PM10)			SPM		
			2004	2007	2008	2004	2007	2008	2004	2007	2008	2004	2007	2008
NAAQS			80			80			100			-		
Sambalpur	Roof of Filter Plant, PHD Off.	R	- L	BD	3	-	11	14	-	74	0	-	163	130
Behrampur	Regional Office	R	-	BDL	BDL	-	15	13	-	89	6	-	201	154
Talcher	T.T.P.S. Colony	I	5	8	14	20	18	24	79	71	16	163	142	234
	Coal Field	I	5	10	10	8	15	19	95	95	4	203	192	189
Angul	Industrial Estate	I	BDL	6	6	17	17	22	61	107	34	113	186	282
	NALCO Nagar	R	4	5	8	8	19	18	101	54	24	188	102	172
Rourkela	IDL Police Outpost	R	5	6	6	9	10	10	82	57	61	165	105	215
	Regional Office	R	BDL	5	5	9	10	11	73	68	50	132	130	188
Rayagada	Jaykaypur	I	BDL	BDL	BDL	7	10	19	56	65	0	100	117	112
	Regional Office	R	BDL	BDL	BDL	11	13	20	59	81	1	107	156	121
Bhubaneswar	SPCB Building	R	5	BDL	BDL	20	14	18	79	75	14	163	169	158
	IRC Village	R	5	BDL	BDL	8	13	21	95	88	40	203	324	166
	Capital Police Station	R	BDL	BDL	BDL	17	16	18	61	49	22	113	125	157
Cuttack	R.O. Cuttack Office	R	-	BDL	BDL	-	16	23	-	62	32	-	157	281
	Roof of Traffic Tower	R	-	BDL	BDL	-	43	16	-	62	28	-	138	167

Source: National Ambient Air Quality Monitoring Series, CPCB

R – Residential and other areas,

I – Industrial area,

L – Low, M – Moderate, H – High and C – Critical levels of pollution based on exceedence factor (calculated for  $n > 50$  days)

BDL = Below Detection Limit (Concentration less than 4 g/m<sup>3</sup> for SO<sub>2</sub>) □

BDL = Below Detection Limit (Concentration less than 9 g/m<sup>3</sup> for NO<sub>2</sub>) □

57. The tract covers major parts of districts of Sambalpur, Deogarh, Jharsaguda, Bargarh, Bolangir, Sonapur, Dhenkanal, Angul, Boudh, Nayagarh, Khurda, and northern parts of Phulbani (Kandhamal) and western part of Puri districts. Ground elevation of the project districts vary from 150 to 300 m above mean sea level, but the topography of the project region is mostly flat.

## 5. Geology/Soil

58. Three distinct geological formations namely Consolidated, Semi-consolidated, and Unconsolidated are found in Odisha as detailed at Table 8. The project districts comprise of semi-consolidated formation of the Gondwana group and is covered with the rocks of Eastern Ghat mobile belt.

**Table 8 : Distribution of Major Geological Units in Odisha**

Geological Age	Rock formation		Districts
<b>Consolidated Formation</b>			
Pre-Cambrian	Archaean complex	Granite gneisses Charnockites, Khondalites, Schist, Phyllite, slates, Granulite,Banded Haematite Quartzite etc.	Occur in all districts except Kendrapara, Jagatsinghpur, Bhadrak
	Cuddapah Vindhyan	Shale, Sand Stone, Quartzite, Limestone etc.	Koraput, Nowrangpur, Bargarh, Nawapara
<b>Semi – Consolidated Formation</b>			
Palaeozoic – Mesozoic	Gondwana Group	Boulder bed, Sandstone, Shale and coalseams	Angul, Sambalpur, Jharsuguda, Cuttack, Khurda, Bolangir, Phulbani, Sundergarh,
Tertiary	Baripada beds	Loosely cemented calcareous sandstone	Mayurbhanj
<b>Unconsolidated Formation</b>			
Pleistocene to Recent	Alluvium (clay, silt, gravel and sand in varying proportion)		Ganjam, Gajapati, Mayurbhanj, Khurda, Puri, Cuttack, Kendrapara, Jajpur, Bhadrak, Balasore, Keonjhar, Rayagada, Koraput, Nawarangpur

Source: Central Ground Water Board, South Eastern Region, Bhubaneshwar.

## 6. Soils

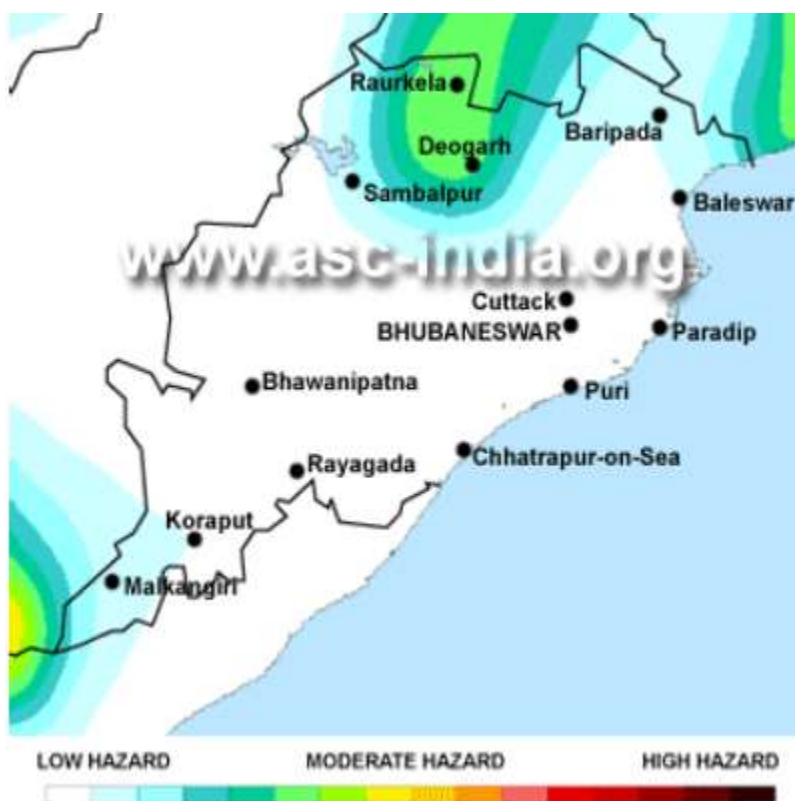
59. The state has different soil types ranging from fertile alluvial deltaic soils in coastal plains, mixed red and black soils in central table land, red and yellow soils with low fertility in northern plateau and red, black & brown forest soils in Eastern Ghat region. The soil types differ widely from high acidic with the degree of acidity varying widely. The majority of soils in Odisha are light textured red soils, which have low water holding capacity, low fertility and are highly erodible.

60. The major soil types within the project districts can be classified into five groups namely: inceptisols, ultisols, entisols, aridisols and alfisols. These soil types can be further classified into brown, red, yellow and lateritic soils. The entisols is sub-classified into younger alluvial, and

laterite soils. The aridisols is sub-classified into saline and salinealkali soils. The alfisols is subclassified into deltaic alluvial soils, older alluvial soils, redgravel soils, red sandy soils, red sandy soils, red loamy and mixed red black soils.

## 7. Earthquake and Seismicity

61. A large portion of Odisha comes under earthquake Risk Zone-II or low damage risk zone. The Mahanadi and Brahmani graven, Mahanadi delta and parts of Balasore and Mayurbhanj district come under earthquake Risk Zone –III or moderate damage risk zone. The seismic hazard map of India was updated in 2000<sup>9</sup> by the Bureau of Indian Standards (BIS) as shown in Figure 2. It reveals that the project region falls in Zones II and III i.e., low to moderate risk zone. According to Global Seismic Hazard Assessment Program (GSHAP) data, the state of Odisha falls in a region of low to moderate seismic hazard. Historically, parts of this state have experienced seismic activity in the M4.0 range. The hazard zoning map is shown in Figure 3.



Source: Amateur Seismic Centre, Pune

**Figure 2 : Hazard Zone Map**

<sup>9</sup> IS 1893 (Part 1): 2002 IS Criteria for Earthquake Resistant Design of Structures Part 1 General Provisions & Buildings (5<sup>th</sup> Revision).





Source: Odisha State Disaster Management Authority

**Figure 3 : Seismic Zone Map**

## 8. Land use

62. The state has broadly divided into 4 physiographic zones namely coastal plains, central tableland, northern plateau and Eastern Ghats. The area under various land uses in the state is presented in Figure 4. It shows that the state records a forest area of 37.3% of the total State area. The cultivated area accounts for about 40% indicating the dominance of agriculture. As per the report of Odisha Remote Sensing Application Centre of 2002, water body covers an area of 230104.36 ha. The Wasteland Atlas of India -2000 reports shifting cultivation area in the state to be 10014.07 ha and mining industrial wasteland of 35.45 ha. This area is gradually increasing as per the other published reports. The land use pattern within the project districts can be broadly classified into arable irrigated, arable un-irrigated, forest areas, waste land/scrub, and rural / urban settlements areas.

## 9. Hydrology and Water Quality

63. Odisha is drained by the Mahanadi, Brahmani, Baitarani, Nagaballi, Subarnarekha, Rusikulya, and the Budhabalanga rivers along with their tributaries and distributaries. The tributaries of Mahanadi are Ib, Jhaun, Jira. The Sankh and the Tirka are important tributaries of Brahmani. Those of Baitarni are the Salandi and the Matai.

64. Hydro geologically, the area is underlain by diverse rock types ranging in age from Achaean to Recent. The State can be hydro-geologically sub-divided into consolidated, semiconsolidated, and unconsolidated formations. as shown in Figure 5.

65. **Surface Water Quality:** The rural road construction proposals normally cross small drainage channels like agricultural field channels, which eventually join major channels/rivulets.

All of these channels generally remain dry for most part of the year and drain the storm water for few weeks only during or after the monsoon.



Figure 4 : Land Use Pattern in the Project Districts

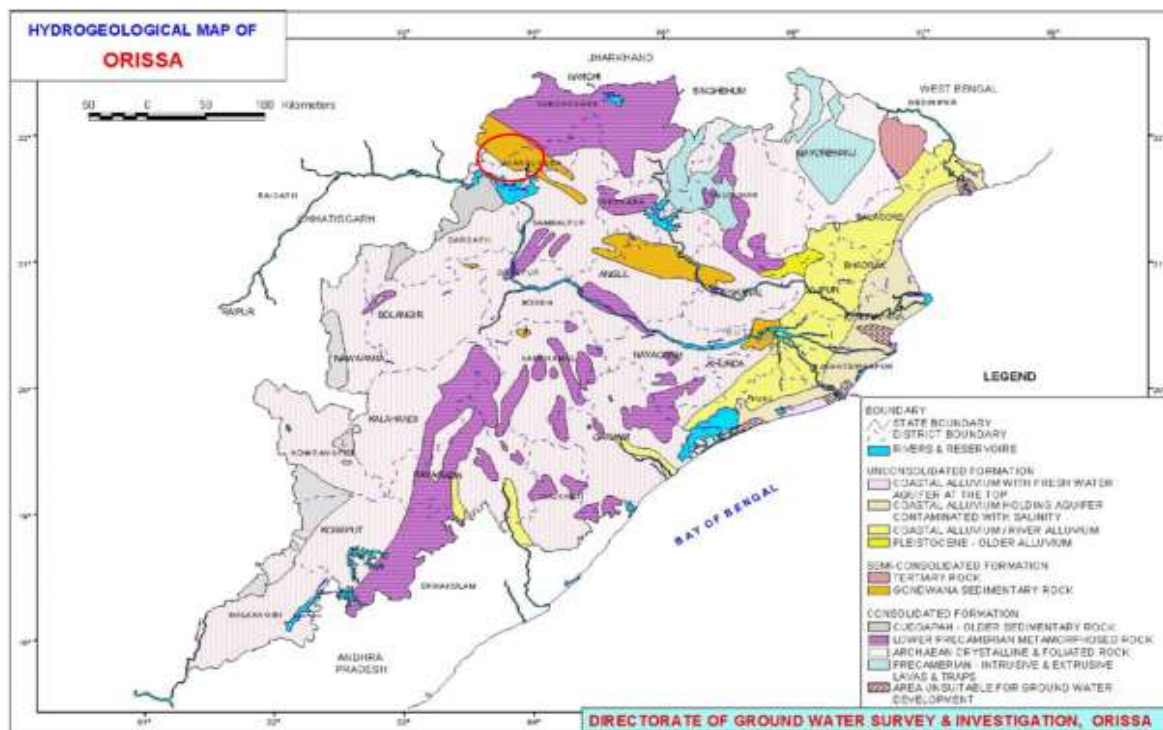


Figure 5: Hydrogeology of Odisha

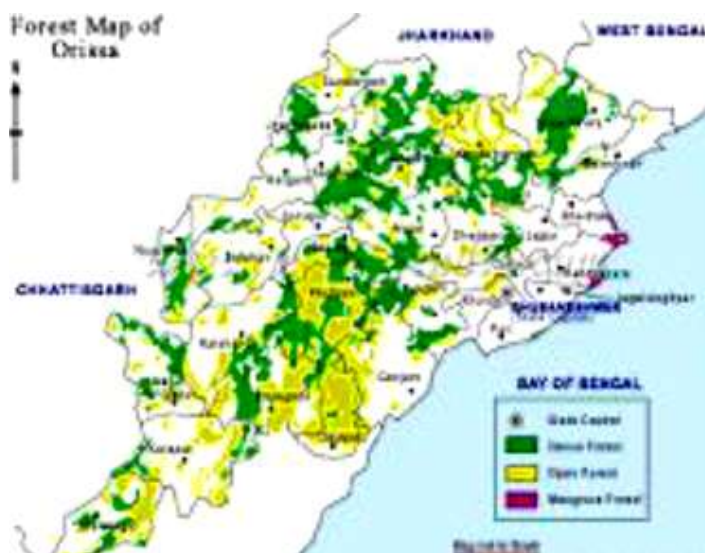
66. **Groundwater Quality and Availability:** In the past, drinking water was obtained from wells, natural springs, streams, rivers, tanks, and lakes. In the plains, where drinking water has been generally insufficient, wells, tanks and small rivers have been the main sources. In hilly and undulating regions, springs, rivulets and wells provide drinking water. Most households in rural areas now rely on hand pumps for their supply of drinking water. Despite their increasing density, there are still places where hand pumps are not available or functioning. In these locations drinking water is sourced from tube wells or even rivers. Piped and tap water is still not common.

67. The groundwater potential in the project districts vary from than 1 liter/sec to 40 liter/sec. the hydro-geological formations in the coastal districts range between porous confined aquifers having primary intra-granular porosity with yields up to 40 liter/sec. to upland regions with generally limited ground water potential having less intra-granular porosity and fractures with yield less than 1 liter/sec. The occurrence of ground water table range from 1m above mean sea level to 500 m above mean sea level across the state.

68. An investigation was carried out by Mahananda et al. in 2010<sup>10</sup> to study the ground as well as surface water qualities, nutrient status, and physico-chemical characteristic of Bargarh district. The analysis was conducted for dug and bore well and three types of surface water (temple and community ponds). A comparative study of both types of ground water as well as pond water was carried out by taking certain important parameters like temperature, pH, total suspended solid, total dissolved solid, alkalinity, dissolved oxygen, chemical oxygen demand, nitrate, chloride, sodium, potassium, phosphate, fluoride and total coliform and faecal coliform (pond water). It was found that the maximum parameters were not at the level of pollution except few parameters like nitrate for ground water. Ground water satisfy the requirement for the use in various purposes, but community pond water quality revealed highly polluted and unsafe for human use. Temple pond was comparatively less polluted than small and large community ponds, the study concluded.

### C. Ecological Resources

69. The state of Odisha is known for abundance of natural beauty and wildlife. The major types of forests present in the state are tropical moist deciduous type and tropical dry deciduous type. The hills, plateaus and isolated areas of the northeastern part of the state are covered by the tropical moist deciduous forests whereas the second types of the forests are located in the southwest region of the state. Some of the trees which grow in abundance in Odisha are bamboo (*Dendrocalamus* sp.), Teak (*Tectona grandis*), Mahula



<sup>10</sup> Mahananda, M.R., Mohanty, B.P. and Behera, N.R., 2010. "Physico-Chemical Analysis of Surface and Groundwater of Bargarh District, Odisha, India", International Journal of Research and Reviews in Applied Sciences, 2010, pp.284-295.

(*Madhuca indica*), sal (*Shorea robusta*), Jamun (*Syzygium cumini*), Dhoben (*Dalbergia paniculata*) Mundi (*Mitragyna parvifolia*) etc. There are 479 species of birds, 86 species of mammals, 19 species of amphibians and 110 species of reptiles present in Odisha. The state is also an important habitat for the endangered Olive Ridley turtles and Irrawaddy dolphins (found in coastal district of Odisha).

## 1. Terrestrial flora

70. Important floral species observed in the project area are Amba (*Mangifera indica*), Aaola (*Emblica officinalis*), Arjun (*Terminalia arjuna*), Ashok (*Saraca asoca*), Bahada (*Terminalia belerica*), Bandhan (*Ougenia oojensis*), Bija (*Pterocarpus marsupium*), Bheru (*Chloroxylon swietiana*), Char (*Buchanania lanzan*), Dhaman (*Grewia tiliofolia*), Dhaura (*Anogeissus latifolia*), Dhoben (*Dalbergia paniculata*), Genduli (*Sterculia urens*), Harida (*Terminalia chebula*), Jamun (*Syzygium cumini*), Kanchan (*Bauhinia spp.*), Karanj (*Pongamia glabra*), Kendu (*Diospyros melanoxylon*), Khair (*Acacia catechu*), Kochila (*Strychnos nuxvomica*), Kongra (*Xylia xylocarpa*), Kurum (*Adina cordifolia*), Kusum (*Schleichera olesia*), Mahalimba (*Ailanthus excelsa*), Mahula (*Madhuca indica*), Tentra (*Albizia procera*), Mundi (*Mitragyna parvifolia*), Phasi (*Anogeissus acuminata*), Pitamai (*Garuga pinnata*), Rai (*Dillenia pentagyna*), Rajmohi (*Lannea coromandelica*), Rimili (*Bursera serrata*), Sagan (*Tectona grandis*), Sal (*Shorea robusta*), Salai (*Boswellia serrata*), Semal (*Bombax ceiba*), Sidha (*Lagerstromia parviflora*), Silveroak (*Grevillea robusta*), Siris (*Albizia lebeck*), Sisso (Bali) (*Dalbergia sisoo*), Sissoo (Pahari) (*Dalbergia latifolia*), Sunari (*Cassia fistula*), Tentuli (*Tamarindus indica*) etc.

71. The project area lies in tropical moist deciduous type and tropical dry deciduous type zone, it has a medium range of flora and fauna. However, none of the roads encroach to any habitat of rare, endangered, or threatened floral species and the habitat type in the area of the project roads are mainly modified habitat as per the definition of the ADB SPS.

## 2. Terrestrial/Avian fauna

72. The protected area (PA) network in the state comprises of 18 sanctuaries as given in Table 9 and Figure 6. It constitutes 4.2% of the geographical area of the state and 11.4% of the forest area.

**Table 9 : List of Protected Areas in Odisha**

S. No.	Name	District Located	Area (sq. km)
<b>SANCTUARIES</b>			
1.	Badrama	Sambalpur	304.03
2.	Baisipali	Nayagarh	168.35
3.	Balukhand-Konark	Puri	71.71
4.	Bhitarkanika	Kendrapara	672.00
5.	Debrigarh	Baragarh	346.91
6.	Gahirmatha	Kendrapara	1435.00
7.	Hadgad	Keonjhar	191.06
8.	Karlapat	Kalahandi	147.66
9.	Khalasuni	Sambalpur	116.0
10.	Kotgad	Phulbani	399.05
11.	Kuldhia Wildlife	Balasore	272.75
12.	Lakhari Valley	Gajapati	185.87
13.	Nalaban(Chilika)	Khurda, Puri & Ganjam	15.53



14.	Satkosia Gorge	Angul, Nayagarh, Phulbani	745.52
15.	Sunabeda	Nuapada	591.75
<b>NATIONAL PARKS</b>			
1.	Nandankanan	Khurda	14.16
2.	Similipal Tiger Reserve	Mayurbhanj	2200.00
3.	Chandaka Elephant Reserve	Khurda & Cuttack	175.79

73. Debrigarh Wildlife Sanctuary is about 5 km away from the proposed roads in Ambabhona and Bhatli blocks in Bargarh District.

74. Important faunal species found in the forest areas of Odisha are Sambar (*Cervus unicolor*), Chital (*Axis axis*), Barking deer (*Muntiacus muntjak*), Indian wild boar (*Sus scrofa*), Rhesus macaque (*Macaca mulatta*), Common langur (*Presbytis entellus*), Indian porcupine (*Hytrix indica*), and Indian pangolin (*Manis crassicaudata*). However, none other than Langur was observed near the subproject roads areas. The occurrence of wildlife species and or threatened or endangered species has not been reported within subproject road areas.

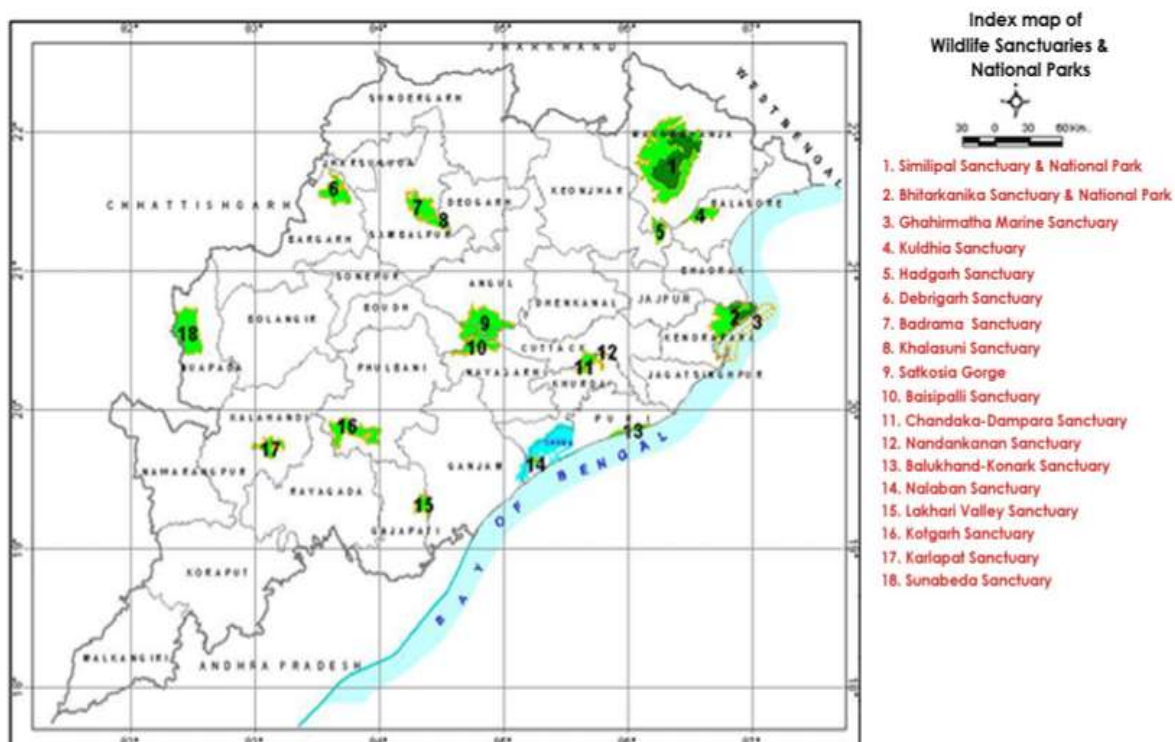


Figure 6: Protected Area Map of Odisha

### 3. Aquatic Biology

75. No wetland or big water bodies are located near the selected subproject road areas. Proposed construction works are not anticipated to affect aquatic biology of the area.

## D. Socio-economic Environment

### 1. Demography

76. The state has an overall population of 41.95 million people as of 2011 of which 34.97 million live in rural areas representing 83.31% of the total. The corresponding rate of urbanization is 15%, compared to almost 30% to India as a whole. The state's average population density was 698 persons per km. In 2011 the gender ratio of the state is 978, which is more than the country as a whole (940). The literacy rate overall is 73.45 % which is slightly lower than the country average (74.04%). The male literacy rate is 82.4% whereas female literacy rate is 64.36%. The demographic profile of the state in comparison with the national average is shown in Table 10.

**Table 10 : Demographic Profile**

S. No.	Item	Odisha	India
1	Total population (Census 2011) (in million)	41.95	1210.19
2	Decadal Growth (Census 2011) (%)	13.97	17.64
3	Crude Birth Rate (SRS 2008)	21.4	22.8
4	Crude Death Rate (SRS 2008)	9.0	7.4
5	Total Fertility Rate (SRS 2008)	2.4	2.6
6	Infant Mortality Rate (SRS 2008)	69	53
7	Maternal Mortality Ratio (SRS 2004 - 2006)	303	254
8	Sex Ratio (Census 2011)	978	940
9	Population below Poverty line (%)	47.15	26.10
10	Schedule Caste population (in million)	6.08	166.64
11	Schedule Tribe population (in million)	8.15	84.33
12	Literacy Rate (Census 2011) (%)	73.45	74.04
13	Male Literacy Rate (Census 2011) (%)	82.4	82.14
14	Female Literacy Rate (Census 2011) (%)	64.36	65.46

Note: Figures in bracket indicate percentage. Source: Census, 2011.

### 2. Healthcare

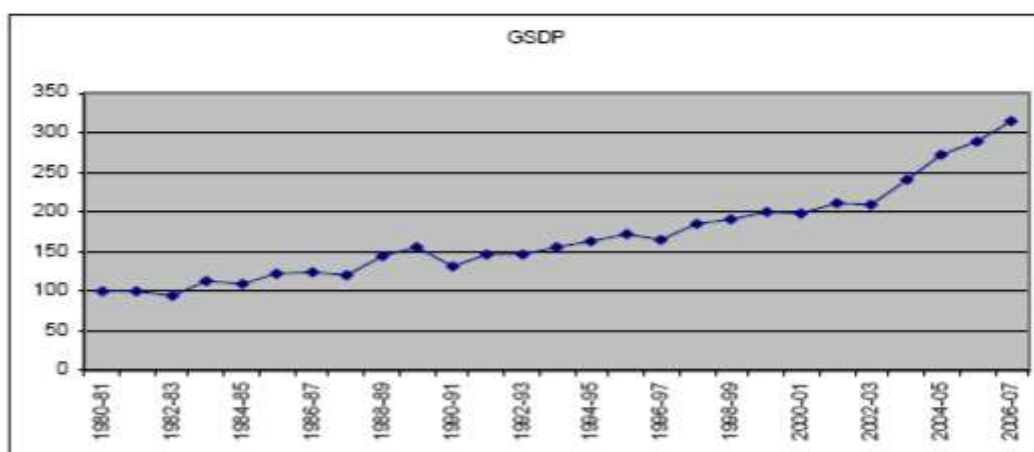
77. As of 2001, there are 180 hospitals, 183 PHCs, 1,166 new PHC (new) and 14 mobile health units in the entire state. There are 13,786 hospital beds with 7,560 people per doctor and 2,663 people per hospital bed which is much higher than the All-India average of 1,361 in the state which is far from satisfactory. The state is well behind the aims of National Health Policy of providing universal health care and access to medical services. Life expectancy in the State has crawled to 57 years against national average of 61. The fact worrying the Government is the infant mortality rate (IMR) which is the highest in India at 96 per thousand. Poor of sanitation and contaminated waters are factor contributing to poor health. The habit of people to defecate in the open causes the spreading of water borne diseases. It is important to provide flush latrines in villages and motivate people to use them.

### 3. Literacy and Education

78. The literacy rate in the state is 73.45% which is slightly lower than the country average (74.04%). The male literacy rate is 82.4% whereas female literacy rate is 64.36%. Poor literacy areas are the less economically developed south and west districts. Only a third, or 11 out of 30 districts, have a literacy rate more than 70% most of which belong to the coastal area. Improvement in literacy rate changes the outlook of the people and makes them more useful assets of the community. The spread of literacy and education among women are more fruitful for the society. There are 35 engineering colleges, 3 medical colleges, 26 engineering schools, and 24 industrial training institutes (it is) to provide technical education.

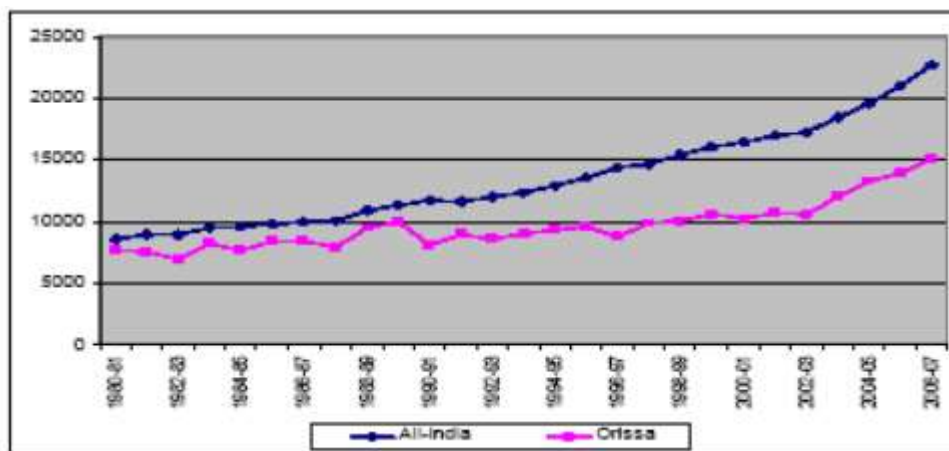
#### 4. Economy

79. The economy of Odisha has been lagging behind the national economy for several decades. Its per capita net state domestic product, a measure of average income, stood at Rs. 20,200 for 2006-07, which falls behind the national average by about 35%. Moreover, the gross domestic product of the state grew by a considerable lower rate than many other states for a long time despite its high growth potential.



**Index of Real GSDP in Odisha**

80. Odisha's real GSDP has grown by an average annual rate of 4.8% on a long term basis during 1980-81 to 2006-07 compared to 6% for the same period for the nation as a whole. The index number of GSDP (with 1980-81 = 100.0) shown in Figure 3.9 nearly doubled over the 20year period 1980-2000 and has further increased by another 60% since then. In particular, the figure shows a sharp rise in the index after 2002-03. The average GSDP growth rate of 8.6% per annum during the period 2002-03 to 2006-07 compares very well with the national level. The per capita income of Odisha was about Rs. 7,700 at 1999-2000 prices in the year 1980-81. It nearly doubled to Rs.15,100 in 2006-07. Per capita income at the national level has grown by 160% from about Rs.8,600 to Rs.22,700 during the same period. Odisha thus continues to remain behind the national average considerably.



**Per Capita Income (NDP) at 1999-2000 prices: Odisha and All India**

## **5. Agriculture**

81. The majority of the population in project districts is dependent on agriculture and subsistence forest. Podu cultivation (slash and burn) is practiced extensively by the tribals in the "dongar" (Upland). In the high hill slopes pulses, millets, mandya (ragi) and oilseeds like niger and mustard are grown. In the "Bilo" (low land) paddy is cultivated. Horticulture is also practiced particularly among the tribals. Vegetables are also cultivated crops being sweet potato, beans, chilly and yam. The agriculture is rain-fed. The agricultural implements used are still wooden plough, wooden plod-breaker (coporpotta) and phouda sickle and hand axe especially in the backward districts of Koraput, Malkangir etc.

## **6. Industry and Mines**

82. Although Jharsuguda and Sundergarh have major industrial areas, none of them fall within the core or the buffer zone of the proposed road corridors. In general, none of the proposed road falls in mineral mining area whereas coal mining is the major mining activities of Jharsuguda districts. Sundargarh is known for the iron ore mining areas and Rourkela steel plant. None of these mining areas fall within subproject areas.

## **7. Flood Control facilities**

83. Odisha is generally prone to various disasters like flood, cyclone, drought and fire. The last super cyclone in 1999 is an unforgettable event in the history of Odisha so also the high flood in 2001 and the drought in 2002. Bargarh roads are prone to flood during monsoon season. Various organizations working in Odisha in the field of disaster management as given below might be consulted for any further precaution in construction work apart from proper drainage provisions.

- Odisha State Disaster Mitigation Authority
- National Informatics Centre
- UNDP

## **8. Archaeological/Historical monuments**



84. Although, Odisha is known to have several archaeological and historical/protected monuments spread all over the state, none of them are situated within 5 km on each side from the sample project roads.

### 9. Temples/Shrines/Idols/Statues

85. No historical religious structure falls close to proposed sample roads. Small tombs and roadside small temples do falls. Some of these which might be impacted or require relocation due to the construction works.

### 10. Power

86. During 2002-03, State's share in installed capacity in the State sector was 2,798.88 MW (hydro 1,918.88 MW and thermal 880.00 MW) against which power was available to the extent of about 869 MW. In addition to this, 440 MW of power was received from Central sector projects towards State share and 62 MW of power was purchased from captive power plants installed in the State by different industries. Thus, from all sources about 1371 MW of power was available against the estimated demand of 1367 MW. Out of 46,989 inhabited villages in the State, 37,790 villages have been electrified by the end of 2002-03 with coverage of 84%.

### E. Salient Environmental Features of Sample Roads

87. The salient environmental features of sample roads are summarized in Table 11 below.

**Table 11: Salient Environmental Features of Sample Roads**

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
1	Balasore	Balasore	PWD Road- Kuradiha (2.0 km) L 079	Issues identified and addressed by providing CD works at Ch. 0/350, 0/470, 0/750, 1/860, 580, 0/910, 1/350 and 1/920 Km. HP Culvert. chainages and Protection Wall at Ch. 0/600 to 0/700 (Both side), 0/900 to 0/960 (RHS) and Drain 0/750 to 0/8900 Km. (Both Side). The topography is mostly plain The road passes through patches of agriculture land The inhabited area located at- 0/000 to 0/100 and 0/900 to 1/300 Km. Few tree cutting and utility/community structure shifting will be required .
2	Balasore	Simulia	Dadhibamanpur to Parameswarpur (3.5 km) L-036	The topography is mostly plain The agricultural land located in patches along road alignment at Ch. 0/200 to 0/400, 0/700 to 0/800, and 2/200 to 3/500 Km There is no problem of water stagnation and other drainage issues on or near the road. However, community suggested for 14 CD works at Ch. 0/510, 0/630, 0/870, 0/930, 0/990, 1/110, 1/560, 1/860, 2/490,

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				2/910, 3/000, 2/980 , 3/180, 3/390 Km. including 1 RCC Slab culverts at Ch.3/000 Km and 1 Box Cell Culverts at Ch.0/870 Km. There are trees existing on road alignment. Tree felling/alignment shifting not required.
3	Bhadrak	Dhamangar	PWD Road to Dinajpur (3.7 km) L-30	Issues identified and addressed by providing CDs at 0/200, 0/550, 0/650, 1/150, 1/350, 1/650, 1/850,2/350, 2/600, 3/200, 3/750 and 2/800Km. and retaining wall at Ch. 2/310 to 2/480 Km. and Ch. 2/820 to 2/920 Km. RHS. The topography is mostly plain The agricultural land located in patches along road alignment at Ch. 0/100 to 2/300 and 2/600 to 2/700, 2/900 to 4/000 Km. Inhabited areas at- Ch 4/200 to 5/000 Km Swamps are located at Ch. 4/200 to 4/400, 4/600 to 4/700, 4/800 to 5/000 Km. No utility shifting
4	Bhadrak	Basudevapur	T-2 to Purusotampur (1.5 Km) L -50	The topography is mostly plain The road does not passes through any sensitive locations such as forests, religious, cultural or other places of public importance School located at Ch. 1/000 Km., Village area at Ch. 1/000 to 1/200 Km CD works at Ch. 0/600, 0/850, 0/616, 1/150, 1/220 Km. HP Culvert Protection Wall proposed from Ch. 0/500 to 0/725 Km
5	Bolangir	Bolangir	Baxiundar to Dhobaudar (Road-B) (2.5 km) L-29	Issues identified and addressed by providing 7 CD works at Ch. 0/130, 0/440, 0/655, 1/677, 0/960, 1/334, 1/430Km. Toe Wall at Ch. 0/700 to 0/770, and 1/560 to 1/630 Km. The topography is mostly plain Inhabited areas are located along the road alignment Ch. 0/000, 0/100, 0/200, 0/300, 0/400, 1/300, 1/400, 1/500, 1/600, 1/700, 1/900, 2/000, 2/100 Km. The agricultural land located in patches along road alignment at Ch. 0/400 to 0/600, 0/900 to 1/100, 1/600 to 1/900Km.. No tree cutting/utility shifting
6	Bolangir	Bolangir	SH-42 to Bedtenlenpali (Road-A)	Issues identified and addressed by providing 11 CD works at Ch. 0/400,

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
			(3.33 km) L-78	<p>0/640, 1/950, 2/770, 0/250, 0/710, 1/130, 0/910, 1/380, 2/410, 2/505Km. Including 4 nos of RCC Slab Culvert at Ch.0/910, 1/380, 2/410, 2/505 Km. Toe Wall at Ch. 2/300 to 2/360, and Retaining Wall at Ch.1/630 to 1/750 Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch.3/100, 3/200, 3/300 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 2/400 to 2/600Km.</p> <p>No tree cutting/utility shifting</p>
7	Bolangir	Bolangir	Bhudimuhan to Santenpali (Road-c) (2.3 km) L-77	<p>Issues identified and addressed by providing 8 CD works at Ch. 0/147, 0/310, 0/435, 0/830, 1/111, 1/130, 1/221, 1/345, 2/130Km. Including two RCC Slab Culvert at Ch.0/830, 1/111 Km. chainages and Toe Wall at Ch. 0/600 to 0/640, and 1/565 to 1/675 Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch. 2/000 to 2/300 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/400 to 0/500, 1/000 to 1/200, 1/300 to 1/600Km.</p> <p>No tree cutting/utility shifting</p>
8	Bolangir	Deogaon	PWD Road to Jamjharan (4.5 km) L-21	<p>Issues identified and addressed by providing 13 CD works at Ch. 0/570, 1/184, 2/974, 3/000, 3/706, 3/808, 1/082, 1/262, 1/450, 1/682, 3/578, 3/923, 3/365Km. Including 1 no's of RCC Slab Culvert at Ch.3/365Km. Toe Wall at Ch. 3/000 to 3/300, and Drain at Ch.0/000 to 0/200 Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch.0/000 to 0/100, 2/300 to 2/400, 2/500 to 3/100, 4/400 to 4/500 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/200 to 0/300, 0/500 to 0/600, 1/300 to 1/400, 3/200 to 3/300, 4/000 to 4/100, 4/300 to 4/400Km.</p> <p>No tree cutting/utility shifting</p>
9	Bolangir	Bangomunda	Khira to Deogaon (5.0 km) L-070	<p>Issues identified and addressed by providing 8 CD works at Ch. 0/250, 0/485, 0/550, 0/830, 0/415, 1/137, 2/615, 3/450, 3/640, 3/915, 4/150, 4/380, 0/720, 1/290, 1/500, 1/745,</p>

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				<p>3/260, 4/240, 2/915Km. Including one RCC Slab Culvert at Ch.2/915 Km. chainages and Toe Wall at Ch. 0/222 to 0/485, 0/600 to 0/715, 2/980 to 3/200 and Drain at Ch. 0/750 to 0/820, 1/140 to 1/265, 4/170 to 5/000 Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch. 0/000 to 0/150, 2/100 to 2/300, 2/600 to 3/200,3/900 to 4/500 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/200 to 0/700, 0/800 to 1/000, 2/400 to 2/500, 3/200 to 3/500, 4/500 to 4/700Km.</p> <p>No tree cutting/utility shifting</p>
10	Bolangir	Titlagarh	MDR-40 to Thalka (2.22 km) L-032	<p>Issues identified and addressed by providing 4 CD works at Ch. 0/820, 1/200, 1/450, 2/000 Km. chainages and Toe Wall at Ch. 1/043 to 1/217, 1/600 to 1/650, 1/717 to 1/820 Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch. 0/700 to 1/000, 2/100 to 2/220 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 1/000 to 1/200, 1/600 to 1/800, 1/900 to 2/100 Km.</p> <p>Single Tree cutting/alignment shifting proposed</p>
11	Bolangir	Bangomunda	Dangia to Bagbahal (2.4 km) L-066	<p>The topography is mostly plain Inhabited areas are located along the road alignment Ch. 1/100 to 1/500 Km.</p> <p>There is no problem of water stagnation and other drainage issues on or near the road</p> <p>There are trees existing on road alignment. But tree felling is not required as sufficient ROW is available</p>
12	Bolangir	Titlagarh	Sireikela-Goudtola RD Road to Goidabari (0.60 km) L-071	<p>Issues identified and addressed by providing 10 CD works at Ch. 0/300, 0/400, 0/500, 0/590 Km. chainages and Toe Wall at Ch. 0/170 to 0/245, Km.</p> <p>The topography is mostly plain Inhabited areas are located along the road alignment Ch. 0/500 to 0/600, Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/000 to 0/500Km.</p> <p>No tree cutting/utility shifting</p>

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
13	Cuttack	Narsinghpur	Nuagarh to Bhuska (3.8 km) L-81	<p>Issues identified and addressed by providing CD works at 1/680, 1/740, 1/860, 1/950, 2/040, 2/170 and 2/430 Km. including 1 Box Cell Culvert at Ch. 2/170 Km. chainages and Protection wall from Ch. 2/420 to 2/490 Km.</p> <p>The topography is mostly plain Road passess through forest area on exixting alignment. Permission taken Inhabited area found at Ch. 0/000 to 0/500, 1/700 to 2/400, 3/100 to 3/400 Km. along the road alignment. The agricultural land located in patches Ch.0/500 to 0/600 and 2/100 to 2/400 Km.</p> <p>No tree cutting/utility shifting</p>
14	Deogarh	Deogarh	Saida to Rugudakudar Road (5.45 km) L-26	<p>The topography is mostly plain Inhabited areas located at- 1/000 to 1/600, 2/700 to 3/000 and 5/300 to 5/450 Km</p> <p>A canal crosses the road at Ch 3/050 Km</p> <p>No, No part of the road is prone to flooding</p> <p>There are trees existing on road alignment. But tree felling is not required since sufficient ROW is available</p>
15	Ganjam	Sorada	Nuagam to Binjigiri (4.1 km) L-034	<p>Issues identified and addressed by providing CD works at Ch. 0/070, 0/713, 0/880, 1/050, 2/010, 2/610, 3/160, 3/330, 3/610, 3/700, 3/770, 3/870, 4/070 Km. HP Culverts including one RCC Slab Culvert at Ch. 3/160 Km. and one Box Cell Culvert at Ch. 3/870 Km.</p> <p>The topography is mostly plain Habitation area located at Ch. 0/200 to 0/300, 1/100 to 1/350, 2/400 to 2/500, 2/600 to 3/100, 3/900 to 4/100 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/200 to 0/900 Km</p> <p>No tree cutting/utility shifting</p>

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
16	Ganjam	Sorada	Sunakhandi to Sandhipiplapanka (2.5 km) L-042	<p>Issues identified and addressed by providing CD works at Ch. 0/050, 0/350, 0/540, 0/750, 1/180, 1/300, 1/400, 1/588, 1/750, 1/862, 1/952, 2/260 Km. HP Culverts including two Box Cell Culvert at Ch. 0/540, 1/300 Km. and one RCC Slab Culvert at Ch. 1/400 Km.</p> <p>The topography is mostly plain Habitation area located at Ch. 0/000 to 0/200, 2/200 to 2/500 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 1/200 to 1/400 Km.</p> <p>No tree cutting but EP shifting to be done</p>
17	Ganjam	Bhanjanagar	PWD Road to Boribandha (2.0 km) L-031	<p>Issues identified and addressed by providing CD works at Ch. 0/170, 0/230, 0/420, 0/520, 0/750, 1/320, 1/550, 1/700, 1/760, 1/950 Km. HP Culverts including two RCC Slab Culvert at Ch. 0/170, 0/230 Km.</p> <p>The topography is mostly plain Habitation area located at Ch. 0/400 to 0/600, 0/700 to 1/400, 1/800 to 2/000 Km</p> <p>The agricultural land located in patches along road alignment at Ch. 0/300 to 0/600, 1/500 to 1/600 Km.</p> <p>No tree cutting/utility shifting</p>
18	Ganjam	Sorada	RD Road (Mayangi) to Dhepapalli (13.20km) L-061	<p>Issues identified and addressed by providing CD works at Ch. 0/430, 0/630, 0/700, 1/140, 1/200, 1/300, 1/750, 1/990, 2/190, 2/650, 2/828, 2/860, 2/950, 2/980, 3/020, 3/100, 3/170, 3/550, 3/860, 4/270, 4/500, 4/600, 4/760, 4/930, 5/070, 5/160, 5/530, 5/560, 5/680, 5/710, 5/930, 6/000, 6/410, 6/480, 6/560, 6/690, 6/860, 6/970, 7/000, 7/120, 7/230, 7/410, 7/520, 7/610, 7/700, 7/830, 7/900, 8/270, 8/950, 10/500, 11/100 Km. HP Culverts including three Box Cell Culvert at Ch. 8/950, 10/500, 11/100 Km. and Five RCC Slab Culvert at Ch. 2/828, 3/100, 3/170, 3/550, 8/270 Km.</p> <p>The topography is mostly plain Habitation area located at Ch. 0/000 to 0/500, 0/700 to 1/400, 1/600 to 1/700, 2/700 to 2/800, 3/300 to 4/200, 4/500 to 4/600, 5/700 to 6/200, 9/000 to 9/400, 11/100 to 11/400, 12/400 to 13/100 Km.</p>

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				The agricultural land located in patches along road alignment at Ch. 1/400 to 1/600, 4/200 to 4/300, 4/400 to 4/500, 5/500 to 5/800, 6/600 to 6/700, 9/400 to 10/000, 11/600 to 12/200, 13/000 to 13/200 Km. Few Tree Cutting/ alignment shifting
19	Ganjam	Bhanjanagar	Dhumakumpa to Akhupadar (3.8 km) L-051	Issues identified and addressed by providing CD works at Ch. 0/400, 0/700, 0/850, 0/900, 1/160, 1/170, 1/350, 1/400, 1/450, 1/550, 2/280, 2/400, 2/560, 2/710, 3/100, 3/400 Km. HP Culverts including Four RCC Slab Culvert at Ch. 0/850, 2/280, 2/710, 3/400 Km. The topography is mostly plain Habitation area located at Ch. 0/000 to 0/800, 1/300 to 1/400, 1/600 to 1/800, 1/900 to 2/200, 2/400 to 2/700, 2/900 to 3/300, 3/600 to 3/700 Km. The agricultural land located in patches along road alignment at Ch. 0/900 to 1/200, 1/500 to 1/600, 2/500 to 2/600, 2/800 to 2/900, 3/400 to 3/700 Km. Few Tree Cutting/ alignment shifting
20	Ganjam	Bhanjanagar	Kathachira to Kumbhipalli (5.0 km) L-026	The topography is mostly plain Habitation area located at Ch. 0/000 to 0/200, 0/600 to 0/900, 1/800 to 2/000, 3/100 to 3/600, 4/100 to 4/300, 4/800 to 4/900 Km Road not flood prone and no water stagnation on/along the road.
21	Ganjam	Khallikote	Badapalli to Badabola (2.2 km) L-61	Issues identified and addressed by providing CD works at Ch. 0/270, 0/645, 0/870, 0/950, 1/160, 1/380, 2/040 Km. HP Culverts including one Box Cell Culvert at Ch. 0/270 Km. The topography is mostly plain Habitation area located at Ch. 1/710 to 1/970, 2/100 to 2/000 Km. There is agricultural land located in patches along road alignment at Ch. 0/000 to 2/200 Km. No tree cutting/utility shifting
22	Jagatsinghpur	Tirtol	Badjanga to Rankei (2.7 km) L-043	Issues identified and addressed by providing CD works at Ch. 0/315, 0/345, 0/822, 2/350 Km. HP Culverts. The topography is mostly plain The inhabited area located at- Ch. 0/600 to 1/000 Km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/400, 1/000 to 1/100, 1/900 to 2/100 Km.

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				Tree felling/ alignment shifting No utility shifting
23	Jagatsinghpur	Tirtol	Nuapokhari to Dianpur (1.7 km) L-031	Issues identified and addressed by providing CD works at Ch. 0/312, 1/107 Km. HP Culvert. The topography is mostly plain The inhabited area located at- Ch. 1/120 to 1/400 Km. Few EPs to be shifted
24	Jajpur I	Korei	N.H.- 5A TO BADATRILOCHANPUR (0.75 km) L-33	Issues identified and addressed by providing CD works at Ch. 0/120, 0/650 Km. including one 1200mm dia 3 row vented causeway at Ch. 0/120 Km. The topography is mostly plain The inhabited area located at- Ch. 0/600 to 0/750 Km. The agricultural land located in patches along road alignment at Ch. 0/300 to 0/500 Km. Few EPs to be shifted
25	Jajpur	Dharmasala	R & B road to Majhipatna (2.85Km) L029	Issues identified and addressed by providing CD works at Ch. 0/260, 0/626, 0/988, 1/011, 1/025, 1/182Km. Including one Box Cell Culvert at Ch. 1/025 Km. The topography is mostly plain The inhabited area located at- Ch. 0/000 to 0/500, 1/200 to 1/500, 1/700 to 1/800, and 1/900 to 2/800 Km. The agricultural land located in patches along road alignment at Ch. 0/500 to 1/300, 2/600 to 2/700 Km. No treecutting/utility shifting
26	Kalahandi	Koksara	Bhursaguda to Malpada (Road - B) (2.0Km) L- 66	Issues identified and addressed by providing CD works at Ch. 0/763, 0/820, 1/032, 1/356, 1/764 Km. Including 2 no's of RCC Slab Culvert at Ch. 1/032, 1/764 Km. The topography is mostly plain. The inhabited area located at Ch. 0/100, 0/200, 0/300, 0/400, 0/500, 0/800, 0/900 Km. The agricultural land located in patches along road alignment at Ch. 0/500 to 0/800, 1/100 to 1/200 and 1/600 to 2/000 Km. No treecutting/utility shifting
27	Kalahandi	Koksara	Soniapada to Ladugaon (6.03 Km) L- 40	Issues identified and addressed by providing CD works at Ch. 0/470, 0/580, 1/050, 1/480, 1/530, 1/650, 2/245, 3/450, 3/650, 4/265, 4/960, 5/635, and 5/760 Km. The topography is mostly plain Inhabited area found at Ch. 0/200 to 0/400, 1/700 to 1/900, 2/000 to 3/400, 3/900 to 4/200 Km. The agricultural



SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				land located in patches along road alignment at Ch. 0/000 to 0/200, 0/400 to 1/700, 1/900 to 2/000, 3/400 to 3/500, 3/700 to 3/900, 4/600 to 5/400 Km. No treecutting/utility shifting
28	Kalahandi	Koksara	Ampani to Karalakhutiapada 94.80 km) L-39	Identified issues addressed by providing CD works at Ch. 0/650, 1/930, 2/055, 2/460, 3/065, 3/120, 3/450, 3/760, 4/040, 4/760 Km. The topography is mostly plain The inhabited area located at Ch. 0/000 to 1/100, 2/000 to 2/300, 2/700 to 3/100 and 4/600 to 4/800Km. The agricultural land located in patches along road alignment at Ch.1/800 to 2/000, 2/300 to 2/700 and 3/100 to 4/600 Km.No treecutting/utility shifting
29	Kendrapara	Rajnagar	Santhapada to Chakibanka Road (8.0 km) L-35	Issues identified and addressed by providing 4 CD works at chainages 0/850,1/200, 1/500, 4/850 and retaining wall at Ch.0/000-0/600 with slope protection (RHS).At ch. 7/000-8/000 slope protection (RHS).The topography is mostly plain The inhabited area located at- 0/000-0/600 and 7/000 -8/000.The agricultural land located in patches along road alignment at Ch. 0/600 to 7/000Km.
30	Kendrapara	Rajnagar	Mahulia to Pokharia Road (2.5 km) L-44	Issues identified and addressed by providing CD works at 0/200, 0/670,0/810,1/900,2/170. chainages and retaining wall at Ch0/700-0/900 in RH.The topography is mostly plain The inhabited area located at- 0/000-0/300,0/900-1/100. The agricultural land located in patches along road alignment at Ch. 0/400-0/900,1/100-2/500. No treecutting/utility shifting
31	Keonjhar	Keonjhar I	Khajuripani-Kumudabahal road (2.82 km) L-47	Issues identified and addressed by providing 9 CD works at Ch. 0/100, 0/150, 0/300, 0/700, 0/770, 1/000, 2/200, 2/480 and including 1 Box cell at Ch. 1/180km. 500mtr. Retaining Wall at Ch. 0/300 to 0/550 (Both Side) and 280mtr. Drain at Ch. 0/960 to 1/110km. (Both Side) The topography is mostly plain. The inhabited area located at Ch.0/00, 0/700, 0/700 to 1/300, 2/500 to 2/800km.The agricultural land located in patches along road alignment at Ch. 0/300 to 0/600, 1/000, 1/100km.No

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				treecutting/utility shifting
32	Keonjhar	Keonjhar I	N.H.6 to Mahuldiha road (2.85 km) L-40	Issues identified and addressed by providing 9 CD works at Ch. 0/64, 0/490, 0/655, 0/864, 0/984, 1/085, 1/160, 1/744, and 2/550km. 120mtr. Retaining Wall at Ch. 1020 to 1080 (Both Side) and 180mtr. Retaining Wall at Ch. 2100 to 2280km. Right Hand Side. The topography is mostly plain. The inhabited area located at Ch. 1/500 to 1/600 and 2/420 to 2/850km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/400mtr. No treecutting/utility shifting
33	Keonjhar	Keonjhar I	Kusumita to Upper Kampdihi road (3.85 km) L-69	Issues identified and addressed by providing 11 CD works at Ch. 0/200, 0/366, 0/396, 0/510, 1/155, 2/264, 2/446, 2/618, 2/925, 3/285, 3/640 and including 2 Box cell at Ch. 0/720 and 0/960. The topography is mostly plain. Issues identified and addressed by providing 11 CD works at Ch. 0/200, 0/366, 0/396, 0/510, 1/155, 2/264, 2/446, 2/618, 2/925, 3/285, 3/640 and including 2 Box cell at Ch. 0/720 and 0/960. The agricultural land located in patches along road alignment at Ch. 0/400, 0/500, 0/700, 0/800, 1/200, 1/400, 1/800, 2/000, 3/000, 3/400, 3/500km. No treecutting/utility shifting
34	Keonjhar	Telkoi	PWD Road- Ramachandrapur (2.0Km) L-67	The topography is mostly plain. Issues identified and addressed by providing 8 CD works at Ch. 0/400, 0/830, 0/920, 1/085, 1/350, 1/500, 1/530 and 1/600km. protection through Retaining wall Ch. 0/000 to 0/180 LHS. The inhabited area located at Ch. 0/000 to 0/125 and 1/400 to 1/700 The agricultural land located in patches along road alignment at Ch. 0/00 to 1/300km No treecutting/utility shifting

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
35	Keonjhar	Telkoi	PWD Road – Lokanathpur (1.5 Km) L-61	Issues identified and addressed by providing CD works at Ch. 0/005, 0/400, 0/870, 1/050 1/525 Km. HP Culverts. The topography is mostly plain Habitation area located at Ch. 0/100 to 0/700 Km. The agricultural land located in patches along road alignment at Ch. 0/700 to 1/000, 1/400 to 1/500 Km. No treecutting/utility shifting
36	Keonjhar	Telkoi	Kaliahata- Karangapal (5.15 Km) L-31	Issues identified and addressed by providing 12 CD works at Ch. 0/955, 1/361, 2/440, 1/153, 0/004, 2/855, 4/010, 4/165, 4/450, 3/350km. And including 2 Box cell culvert at Ch. 0/717 and 3/320km. protection measures: Retaining wall 150mtr. from Ch. 0/700 to 0/775 Both Side, 50mtr. From 0/443 to 0/493 LHS and 100mtr Drain Ch. 2/450 to 2/550, and 44mtr. Drain from Ch. 4/350 to 4/394km. The topography is mostly plain. The inhabited area located at Ch. 0/0, 0/100, 0/200, 1/100 to 2/000km. 2/300 to 2/500km. and 3/500 to 5/150km. The agricultural land located in patches along road alignment at Ch. 0/00 to 1/200, 3/000 to 5/000km. No treecutting/utility shifting
37	Khurda	Bolagarh	RD road to Ekadalia (2.11 Km) L-26	Issues identified and addressed by providing CD works at Ch. 0/500, 0/845, 0/945, 1/185, 1/250, 1/400, 1/510 and 1/665 Km. Tow wall 474 mtr. at Ch. 1/500 to 1/764, 1/900 to 2/000(Both side) and 2/000 to 2/100 Km. The topography is mostly plain. The inhabited area located at- 1/885 Km. to 2/110 Km. The agricultural land located in patches along road alignment at Ch. 1/400 to 1/500, 1/500 to 1/600, 1/700 to 1/800 Km. Tree felling/alignment shifting suggested. Few EPs to be shifted.
38	Khurda	Balianta	Balipatna RD road to Hotasahi (2.4 Km) L-26	Issues identified and addressed by providing CD works at Ch. 0/010, 0/800, 1/000, 1/450, 1/595, 1/705, 1/850, 0/325 Km. including 1 RCC Slab Culvert at Ch. 0/325 Km. The topography is mostly plain. The inhabited area located at- Ch. 1/990 to 2/400 Km. Agricultural Land located at Ch. 0/100 to 1/800 Km. No treecutting/few EPs to

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				be shifted.
39	Koraput	Koraput	N.H-43 to Chapsil Road (1.85 Km) L-072	Identified issues addressed by providing 8 CDs and toe wall 879 mtr. at Ch. 0/580 to 0/830 Km. (Both Side), 0/850 to 1/229 Km. The topography is mostly plain. The inhabited area located at- 1/495 Km. to 1/945 Km. The agricultural land located in patches along road alignment at Ch. 0/500 to 0/600, 0/600 to 0/700, 0/700 to 0/800, 0/800 to 0/900 Km. No tree cutting/ utility shifting
40	Koraput	Koraput	P.W.D Road to Ambagam (2.7 Km) L-024	Issues identified and addressed by providing 9 CD works and protection measures at Ch. 1/100 to 1/200 LHS and 1/200 to 1/225 both sides The topography is mostly plain The inhabited area located at- 1/495 Km. to 1/945 Km. The agricultural land located in patches along road alignment at Ch. 0/500 to 0/600, 0/600 to 0/700, 0/700 to 0/800, 0/800 to 0/900 Km. No tree cutting/ utility shifting
41	Koraput	Koraput	N.H-43 to PANASPUT Road (4.6 Km) L-075	Issues identified and addressed by providing CD works at Ch. 0/050, 0/200, 0/300, 0/700, 1/300, 1/700, 1/900, 2/300, 3/100, 3/500, 4/300, 4/500 Km. – HP Culvert. The topography is mostly plain. The inhabited area located at-0/700 to 1/200, 4/300 to 4/600 Km. The agricultural land located in patches along road alignment at Ch. 1/500 to 2/200, 2/900 to 3/200, 3/400 to 3/700 and 4/200 to 4/500 Km. No tree cutting/ utility shifting
42	Koraput	Semiliguda	Sorisapadar(NH-26) to Bhitarkota N.H-43 to Panaspur Road (11.0 Km) L-33	Issues identified and addressed by providing CD works at Ch. 0/450, 0/650, 0/750, 0/800, 0/900, 1/000, 1/500, 1/550, 1/700, 1/800, 2/200, 2/600, 2/700, 3/200, 3/700, 4/400, 4/700, 5/100, 5/300, 5/550, 6/350, 6/700, 6/800, 7/300, 7/650, 8/000, 8/300, 8/400, 8/500, 9/000, 9/200, 9/300, 9/600, 10/000, 10/200, 10/400, 10/450, 10/600 Km. Including 1 no's of RCC Slab Culvert at Ch. 10/600 Km. The topography is mostly plain The inhabited area located at-2/700 to 3/100, 9/100 to 9/400, 10/900 to 11/000 Km. Agricultural land located in patches along road alignment at Ch. 3/400 to

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				3/600, 6/000 to 6/200, 7/500 to 7/800, 8/000 to 8/100 Km.No tree cutting/ utility shifting
43	Koraput	Semiliguda	Bilaput to Bhitarsubai (1.0 Km) L-61	Issues identified and addressed by providing CD works at Ch. 0/000, 0/110, 0/550, 0/400 Km. – HP Culvert.The topography is mostly plain The inhabited area located at-0/800 to 0/900, 0/900 to 1/000 Km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/300, 0/400 to 0/600Km. No tree cutting/ utility shifting
44	Koraput	Semiliguda	Malimarla to Uppergelaguda (1.5 Km) L-34	Issues identified and addressed by providing CD works at Ch. 0/000, 0/150, 0/800, 0/900, 1/100, 1/400 Km. – HP Culvert.The topography is mostly plain. The inhabited area located at-0/400, 0/500, 0/600 ,1/300, 1/400 Km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/400, 0/400 to 0/600, 1/000 to 1/100Km.No tree cutting/ utility shifting
45	Koraput	Semiliguda	NH-43 (26) to Daleiguda (6.0 Km) L-78	Issues identified and addressed by providing CD works at Ch. 0/000, 0/150, 0/250, 0/300, 0/550, 0/650, 0/760, 0/900, 1/050, 1/450, 1/750, 1/850, 1/950, 2/100, 2/200, 2/450, 2/650, 2/900, 3/000, 3/050, 3/100, 3/250, 3/400, 3/500, 3/750, 4/200, 4/300, 4/450, 4/650, 4/900, 4/950, 5/900Km. Including 1 no's of RCC Slab Culvert at Ch.3/500 Km.The topography is mostly plain The inhabited area located at-1/500, 1/600, 1/700 ,1/800, 1/900,2/000, 2/900, 3/000, 4/500, 4/600, 4/700, 4/800, 4/900, 5/000 Km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/200, 0/400 to 1/200, 2/000 to 2/400, 2/700 to 2/800Km. No tree cutting/ utility shifting
46	Koraput	Semiliguda	NH-43 (26) to Bileiguda (2.80 Km) L-77	Issues identified and addressed by providing CD works at Ch. 0/200, 0/400, 0/500, 0/600, 1/250, 1/680, 1/800, 1/900, 2/200, 2/300, 2/500, 2/800 Km. Including 1 no's of RCC Slab Culvert at Ch.0/500 Km.The topography is mostly plain The inhabited area located at-0/800, 0/900, 1/000 ,2/500, 2/600,2/700 KmThe agricultural land located in patches along road alignment at Ch.

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				0/100 to 0/400, 1/100 to 1/200, 1/300 to 1/600Km.No tree cutting/ utility shifting
47	Mayurbhanj	Moroda	PWD Road to Idor (3.0 Km) L-052	Issues identified and addressed by providing protection measures: Toe wall Ch. 0/450 to 0/600 and 0/620 to 0/670 both sides and Drain1/450 to 1/650 both side The topography is mostly plain.The inhabited area located along the alignment. The agricultural land located in patches along road alignment. No tree cutting/ few EPs to be shifted
48	Mayurbhanj	Bangiriposi	RD road to Kundalabani (5.60 Km) L-43	Issues identified and addressed by providing 7 CD works at Ch. 0/128, 0/845, 1/384, 1/748, 2/050, 2/487 and 2/718km.The topography is mostly plain. There are inhabited area along the alignment.The agricultural land located in few patches along road alignment No tree cutting/ few EPs to be shifted
49	Mayurbhanj	Bangiriposi	MDR-45 to Jamdapal (1.10 Km) L-82	Issues identified and addressed by providing 4 CD works at Ch. 0/192, 0/495, 0/864 and 0/935km. The topography is mostly plain The inhabited area located at Ch. 0/000 to 0/300 and 0/940 to 1/100. The agricultural land located in patches along road alignment No tree cutting/ utility shifting
50	Karanjia	Bangiriposi	Ghatkuanri to Domuhani (1.10 Km) L-65	Issues identified and addressed by providing CD works in four places for smooth drainage of water and protection work such as 200 mtr toe wall from Ch. 0/800 to 0/900 both sides and 65 drain from Ch 0/150 to 0/215 LHS The topography is mostly plain The inhabited area located at Ch. 0/940 to 1/100 No agricultural land located along road alignment No tree cutting/ utility shifting
51	Mayurbhanj	Rairangpur	Badgaon to Rehedakocha (N) (2.40 Km) L-30	Issues identified and addressed by providing 6 CD works at Ch. 0/161, 0/425, 0/526, 0/651, 1/305, 1/790Km. The topography is mostly plain The inhabited area located at Ch. 2/050 to 2/280 The agricultural land located in patches along road alignment No tree cutting/ utility shifting There are pond to be protected

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
52	Mayurbhanj	Rairangpur	Gorumahisani to Gidighaty (N) (2.40 Km) L-49	Issues identified and addressed by providing 7 CD works at Ch. 0/128, 0/845, 1/384, 1/748, 2/050, 2/487 and 2/718km. The topography is mostly plain There are forest area on existing alignment, therefore permission is underway Bear, Monkey, Jackal, Deer, Snakes some times seen The agricultural land located in patches along road alignment No tree cutting/ utility shifting
53	Nawrangpur	Nawrangpur	RD Road to Kochiaguda (1.55 Km) ) L-050	Issues identified and addressed by providing CD works at 0/020, 0/400, 0/785, 0/910 and 1/010Km. HP Culverts The topography is mostly plain The inhabited area located at- 0/000 to 0/300, 0/800 to 0/900, 1/400 to 1/550 Km. The agricultural land located in patches along road alignment at Ch. 0/900 to 1/400 Km. Few tree cutting evolved
54	Nawrangpur	Nawrangpur	RD Road to Sonuguda (2.70 Km) ) L-021	Issues identified and addressed by providing CD works at 0/015, 0/600, 0/795, 0/900, 1/300, 1/530, 1/875, 2/165 and 2/370Km. HP Culverts The topography is mostly plain The inhabited area located at- 1/400- 1/800 Km. The agricultural land located in patches along road alignment at Ch. 0/700 to 1/400Km. No tree cutting/utility shifting
55	Nawrangpur	Papadahandi	Miriguda to Dakribeda (3.50 Km) ) L-031	Issues identified and addressed by providing CD works . 0/050, 0/750, 1/680, 2/040, 2/170, 2/430, 2/750, 3/180 and 3/330 Km. HP Culverts The topography is mostly plain The inhabited area located at- 1/700 to 1/900 Km. The agricultural land located in patches along road alignment at Ch. 0/200 to 1/700, 2/200 to 3/500Km. No tree cutting/utility shifting Pond to be protected
56	Nuapada	Nuapada	SH-3 Sunsunia to Dehenpara (3.90 Km) ) L-62	Issues identified and addressed by providing CD works at Ch. 0/025, 0/520, 0/750, 1/200, 1/530, 1/600, 1/900, 2/240, 3/500 Km. including 1 RCC slab Culvert at Ch. 1/600 Km. and 150 mtr. Toe Wall at Ch. 1/610 to

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				1/660 , 2/100 to 2/200 Km. The topography is mostly plain There are habitation areas located at Ch. 1/800 to 1/900, 3/600 to 3/900 Km. The agricultural land located along road alignment Ch. 1/000 to 1/100, 3/400 to 3/500 Km. No tree cutting/utility shifting
57	Nuapada	Nuapada	RD Road to Bhalukana (2.00 Km) ) L-46	Identified issues addressed by providing CD works at Ch.0.030, 0.350, 0.460 and 1.830 Km. The topography is mostly plain Inhabited area found at Ch. 1/000 to 1/200 Km. along the road alignment. Agricultural land exists only between Ch. 0.200 to 0.300 No tree cutting/utility shifting
58	Nuapada	Nuapada	Amodi to Tamkidadar(Road-A) (1.60 Km) ) L-22	Issues identified and addressed by providing CD works at Ch. 0/020, 1/450, 0/980Km. Including 1 RCC slab Culvert at Ch. 0/980 Km. The topography is mostly plain There are habitation areas located at Ch. 0/200 to 0/500, 1/100 to 1/600 Km. The agricultural land located along road alignment Ch. 0/500 to 1/000, 1/100 to 1/400 Km. No tree cutting/utility shifting
59	Nuapada	Khariar	NH-217 to Sandibahali (1.60 Km) ) L-28	Identified issues addressed by providing CDs at Ch. 0/010, 0/700, 1/000, 1/350 Km. including 2 RCC slab Culvert at Ch. 0/700, 1/000 Km. The topography is mostly plain There are habitation areas located at Ch. 1/200, 1/300, 1/400, 1/500 Km. The agricultural land located along road alignment Ch. 0/600 to 0/700, 1/200 to 1/400 Km. No tree cutting/utility shifting
60	Phulbani	Khajuripada	Nediguda to Gundribadi (2.00 Km) ) L-44	Issues identified and addressed by providing CD works at 0/004, 1/835, 1/094, 0/349, 0/298, 0/400, 1/600 Km. chainages and Retaining Wall at Ch. 0/500 to 0/800 (RHS), Toe Wall from 1/100 to 1/300(RHS) and Drain at Ch. 1/900 to 2/000 Km. (RHS). The topography is mostly plain The inhabited area located at- 1/800 to 2/000 Km. The agricultural land located in patches along road alignment at Ch. 0/900 to 1/200, 1/300 to 1/500, 1/600 to 1/800 Km. No tree cutting/utility shifting



SI No.	District/PIU	Block	Road Name	Salient Environmental Features
61	Puri	Kanas	N.J. Sadak to Balipada-A (2.40 Km) ) L-60	Issues identified and addressed by providing CD works at Ch. 0/675, 0/955, 1/600, 1/615 Km. HP Culvert. Toe Wall at Ch. 1/500 to 1/600 (Both side), 1/615 to 1/794 Km. (LHS), 1/615 to 1/695 Km. (RHS). The topography is mostly plain Habitation area found along the road alignment at Ch. 1/900 Km. The agricultural land located in patches along road alignment at Ch. 2/100 to 2/200, 2/200 to 2/300, 2/300 to 2/400 Km. No tree cutting/utility shifting
62	Puri	Pipili	N.H.203 to Potal (1.86 Km) ) L-53	Issues identified and addressed by providing CD works at Ch. 0/310, 0/400, 1/190. Including 1 RCC Slab Culvert at Ch.1/190 Km. PW at Ch. 0/120 to 0/672 (LHS) and Ch.0/650 to 0/710 (RHS)Km. The topography is mostly plain Habitation area found along the road alignment at Ch. 0/620 ,1/000Km. The agricultural land located in patches along road alignment at Ch. 0/300 to 0/800, 1/000 to 1/400 Km. No tree cutting/utility shifting
63	Puri	Pipili	T-6 to Raigurupur (1.00 Km) ) L-68	Issues identified and addressed by providing CD works at Ch. 0/100, 0/130, 0/900. Including 1 RCC Slab Culvert at Ch.0/130 Km. PW at Ch. 0/800 to 0/850 (LHS) and Ch.0/656 to 0/850 (RHS)Km. The topography is mostly plain Habitation area found along the road alignment at Ch. 0/100 ,0/200, 0/300, 0/400, 0/500Km. The agricultural land located in patches along road alignment at Ch. 0/700 to 0/800, 0/800 to 0/900 Km. Few Tree felling/Alignment shifting proposed No utility shifting
64	Puri	K.Prasad	PWD road to kandeswar (2.80 Km) ) L-70	Issues identified and addressed by providing CD works at Ch. 0/550, 1/100, 1/700, 2/720Km. HP Culvert, and slab culvert at Ch.1/100 Km. PW at Ch. 2/425 to 2/800 (LHS),2/424 to 2/800 (RHS).Km. The topography is mostly plain Habitation area found along the road alignment at Ch. 0/900 ,1/200Km. The agricultural land located in patches along road alignment

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				No Tree /utility shifting
65	Puri	Astaranga	Edbansa to Paikhala (1.90 Km) ) L-61	Issues identified and addressed by providing CD works at Ch.0/070, 1/320 Km. Including 2 RCC Slab Culvert. Tow wall 523 mtr. at Ch. 0/150 to 0/350 and 1/000 to 1/323 Km.. The topography is mostly plain The inhabited area located at- 0/000 ,0/100, 0/200, 1/800Km. The inhabited area located at- 0/000 ,0/100, 0/200, 1/800Km. No Tree /utility shifting
66	Puri	Astaranga	L-28 to Osihan (2.10 Km) ) L-29	Identified issues addressed by providing CD works at 0/160, 0/350 , 0/450, 0/750, 1/050 and 1/880 Km chainages and Protection Wall at Ch. 0/650 to 0/850, 1/900 to 2/102 Km. The topography is mostly plain The inhabited area located at- 1/500 to 1/920 Km. The agricultural land located in patches along road alignment at Ch. 0/000 to 0/400, 0/900 to 1/100 Km. No Tree /utility shifting
67	Puri	Astaranga	Manduki to Olara (2.65 Km) ) L-45	Issues identified and addressed by providing CD works at Ch. 1/150, 1/400, 0/600 Km. HP Culvert including one RCC Slab Culvert at Ch.0/600 Km. and Protection Wall at Ch. 0/500 to 0/766 and 0/900 to 1/100 Km. The topography is mostly plain The inhabited area located at- 0/800 to 1/200, 2/100 to 2/200 Km. The agricultural land located in patches along road alignment at Ch. 0/600 to 0/700, 1/900 to 2/000, 2/100 to 2/200, 2/300 to 2/400 Km. No Tree /utility shifting
68	Puri	Astaranga	L-23 to Olihan (1.80 Km) ) L-23	Issues identified and addressed by providing CD works at Ch. 0/550 Km. and 578 mtr. Protection Wall at Ch. 0/150 to 0/250, 0/500 to 0/650, 0/800 to 0/900, 0/950 to 1/178 Km. The topography is mostly plain The inhabited area located at- Ch.

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				0/250 to 0/610, 0/900 to 1/100, 1/300 to 1/600 Km. The agricultural land located in patches along road alignment at Ch. 0/700 to 0/800, 1/100 to 1/200 Km. Tree cutting/Alignment shifting 1 EP to be shifted
69	Sambalpur	Jujumura	Dhalpal to Laida (1.62 Km) ) L-25	Issues identified and addressed by providing CD works as per details attached and CC drain of 260 mtr. & Toe Wall 120 mtr. The topography is mostly plain The inhabited area located at- 1/360 Km. to 1/620 Km. The agricultural land located along road alignment at Ch. 0/400 to 0/500, 0/500 to 0/600, 0/600 to 0/700, 1/000 to 1/100, 1/100 to 1/200 Km. Tree felling/Alignment shifting proposed. No utility shifting
70	Sambalpur	Maneswar	PWD Road to Saradhapali (1.08 Km) ) L-47	Issues identified and addressed by providing CD works at 0/440, 0/512, 0/590, 0/650, 0/714, 0/838 and 0/077 chainages and Tow wall at Ch. 2/230 to 2/280, CC drain Ch. 0/925 to 1/080 Km., Turfing at Ch. 0/000 to 0/925 (Both Side)Km. The topography is mostly plain The inhabited area located at- 0/925 to 1/080 Km. The agricultural land located in patches along road alignment at Ch. 0/100 to 0/200, 0/600 to 0/700, 0/800 to 0/900 Km. No tree cutting/utility shifting
71	Sambalpur	Maneswar	PWD Road to Jampali (0.71 Km) ) L-28	Issues identified and addressed by providing CD works at 0/013, 0/176, 0/290, 0/467 chainages and Tow wall at Ch. 0/000 to 0/025 (Both side), Retaining Wall Ch. 0/447 to 0/497 Km. and Turfing at Ch. 0/000 to 0/610 Km. The topography is mostly plain The agricultural land located in patches along road alignment at Ch. 0/000 to 0/100, 0/100 to 0/200, 0/200 to 0/300, 0/300 to 0/400 Km. No tree cutting/utility shifting
72	Sonepur	Dunguripali	Sunapali Chhak to Chamarpur (3.50 Km) ) L-40	Issues identified and addressed by providing 20 CD works at Ch. 0/005, 0/029, 0/046, 0/277, 0/422, 0/507, 0/662, 0/827, 0/972, 1/038, 1/377, 1/660, 2/171, 2/388, 2/410, 3/135, 3/180, 3/245, 3/295, 3/413 Km. HP

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
				<p>Culverts including 1 RCC slab at Ch. 0/005 Km.</p> <p>The topography is mostly plain</p> <p>The inhabited area located at Ch. 0/600 to 0/700, 2/600 to 2/800, 3/000 to 3/500 Km.</p> <p>The agricultural land located in patches along road alignment at Ch. 0/000 to 0/600, 0/900 to 1/300, 1/600 to 2/600 Km</p> <p>Tree Cutting/ alignment shifting</p> <p>No utility shifting</p>
73	Sonepur	Binika	Gulunda (RD Road) to Piteipali (2.00 Km) ) L-54	<p>Issues identified and addressed by providing 7 CD works at Ch. 0/100, 0/311, 0/430, 0/700, 1/288, 1/371, 1/507 including 1 RCC Slab culverts at Ch. 0/975.</p> <p>The topography is mostly plain</p> <p>The agricultural land located in patches along road alignment</p> <p>No tree cutting/utility shifting</p>
74	Sonepur	Dunguripali	PWD Road to Katapali (3.00 Km) ) L-22	<p>Issues identified and addressed by providing 11 CD works at Ch. 0/523, 0/710, 2/100, 2/400, 2/900, 0/024, 1/022, 1/336, 1/877, 0/957, 1/625 and including One RCC slab Culvert at Ch. 0/195km.</p> <p>The topography is mostly plain</p> <p>The inhabited area located at Ch. 1/100 to 1/200, 1/300 to 1/400 Km.</p> <p>The agricultural land located in patches along road alignment at Ch.0/200 to 0/900, 1/100 to 1/800 Km.</p> <p>No tree cutting/utility shifting</p>
75	Sonepur	Tarava	Sargaj Arda Road to Jamkani (2.0 km) L-57	<p>Issues identified and addressed by providing 5 CD works at Ch. 0/615, 0/925, 1/050, 1/222, 1/585, 1/830 Km. including 1 RCC Slab culverts at Ch. 0/615Km.</p> <p>The topography is mostly plain</p> <p>Inhabited areas at Ch. 0/700 to 1/000 Km.</p> <p>The agricultural land located at Ch. 0/200 to 0/700, 1/100 to 1/200 Km.in patches along road alignment</p> <p>No tree cutting/utility shifting</p>

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
76	Sonepur	Dunguripali	Badkarley to Amamunda (5.30 Km) ) L-26	Issues identified and addressed by providing 24 CD works at Ch. 0/007, 0/183, 0/250,0/395, 0/541, 0/720, 0/778, 0/800, 0/978, 1/280, 1/367,1/428,1/652, 1/972, 2/280, 2/350, 2/586, 2/800, 2/930, 3/190,3/480, 3/600, 4/520, 4/710 Km. HP Culverts including two RCC Slab Culvert at Ch. 0/541, 2/280 Km. The topography is mostly plain. The inhabited area located at Ch. 3/700 to 3/800, 4/800 to 4/900,5/00 to 5/300 Km. Agricultural land located in patches along road alignment at Ch. 0/200 to 0/700, 1/400 to 1/700, 2/000 to 3/700, 4/200 to 4/500 Km. No tree cutting/utility shifting
77	Sonepur	Dunguripali	Sahajbahal Canal Road to Kulthipali (2.60 Km) ) L-28	Issues identified and addressed by providing 10 CD works at Ch. 0/080, 0/245, 0/680, 0/835, 0/990, 1/080, 1/150, 1/330, 1/676, 2/020 Km. HP Culvers including 2 RCC slab Culvert at Ch. 0/245, 1/330km. The topography is mostly plain. The inhabited area located at Ch. 0/100 to 0/200, 0/700 to 0/900, 2/300 to 2/600 Km. The agricultural land located in patches along road alignment at Ch. 1/000 to 1/100, 1/300 to 1/500, 2/000 to 2/200 Km. No tree cutting/utility shifting
78	Sonepur	Binika	Baunsuni to Bhikabahali (3.85 Km) ) L-41	Issues identified and addressed by providing 14 CD works at Ch. 0/000, 0/350, 0/500, 0/608, 0/726, 0/893, 1/170, 1/510, 1/546, 1/783, 2/000, 2/500, 2/900, 3/169 Km. HP Culverts including 1 RCC slab at Ch. 0/608 Km. The topography is mostly plain. The inhabited area located at Ch. 0/0 to 0/160, 3/275 to 3/395 and 3/500 to 3/850. The agricultural land located in few patches along road alignment. No tree cutting/utility shifting

SI No.	District/PIU	Block	Road Name	Salient Environmental Features
79	Sonepur	Dunguripali	NH201 Sargul to Kankarjore (1.90 Km) ) L-57	Issues identified and addressed by providing 10 CD works at Ch. 0/930, 1/325, 1/455, 1/590, 1/820, 0/251, 0/322, 0/395, 1/255, 1/556 including 1 RCC Slab culvert at Ch. 0/011km. And 1 Box Cell culvert at Ch. 0/238km. The topography is mostly plain The inhabited area located at Ch. 0/500 to 0/600, 1/000 to 1/400 Km. The agricultural land located at Ch. 0/100 to 0/300, 1/700 to 1/900 Km. in patches along road alignment No tree cutting/utility shifting
80	Sundargarh	Sundargarh	Karla to Sahupara (3.55 Km) ) L-030	Issues identified and addressed by providing CD works at ch 0/088, 0/150, 0/300, 1/250, 1/710,2/105,2/800,3/300 The topography is mostly plain The inhabited area located at 0/720-1/220 The agricultural land located in patches along road alignment at Ch. 0/088 to 0/150,1/250 to 1/710, No tree cutting/utility shifting
81	Sundargarh	Sundargarh	Majhapada to Aunlajore Via Chandilipada (2.50 Km) ) L-026	Issues identified and addressed by providing CD works at ch 0/240, 0/590, 0/780, 1/140, 1/355, 1/510, 1/730 The topography is mostly plain The inhabited area located at- 2/300 to 2/500Km The agricultural land located in patches along road alignment at Ch. 0/100 to 0/780, 1/510 No tree cutting/utility shifting

88. The overall summary of the key environmental features within 10m corridor of impacts of the tranche 3 roads in Odisha is presented in Appendix 3

#### IV. ANTICIPATED ENVIRONMENTAL IMPACTS AND ITS MITIGATION MEASURES

89. Road improvements work brings substantial economic and social benefits to rural communities and ultimately to the nation as a whole. Experience from past rural road upgrading projects however indicated risk for adverse impacts mostly related during the construction phase and the loss of avenue trees. Impacts are limited as the eligibility screening criteria defined in the environmental assessment and review framework avoids significant adverse impacts and proposed road improvements are confined along existing alignments. The impacts are expected largely during construction phase, which can be mitigated through engineering measures and adoption of best construction practices. This section outlines the identified impacts during design, construction and operation phases along with proposed mitigation measures for eliminating or minimizing the adverse impacts.

90. All project roads are subjected to environmental screening using the ECOP checklist. A sample size of 10% was selected by the ORRDA with support from the Project Implementation Consultant (PIC) from which this state level IEE was based. Separate environmental checklist were prepared for bridges with length greater than 50m. A standard EMP that forms part of the ECOP Checklist guided the preparation of the EMP provided in this report. As the MFF also calls for construction of training and research centers, separate assessments and EMPs will be prepared and may be integrated in the state-level IEEs as the designs and construction schedule are finalized.

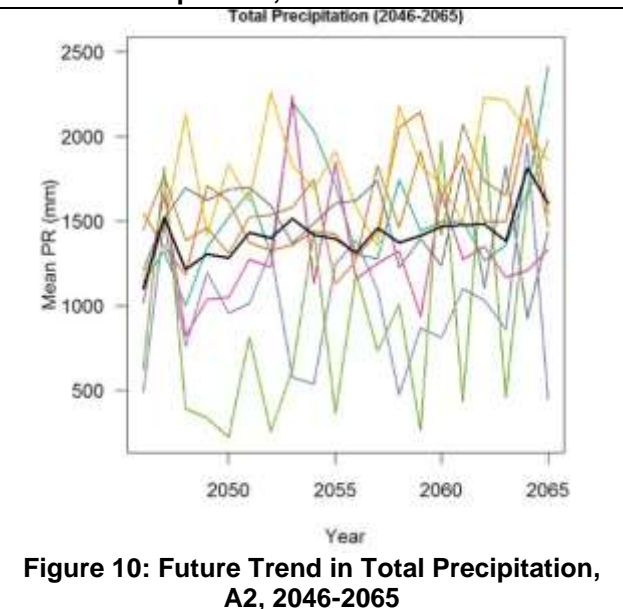
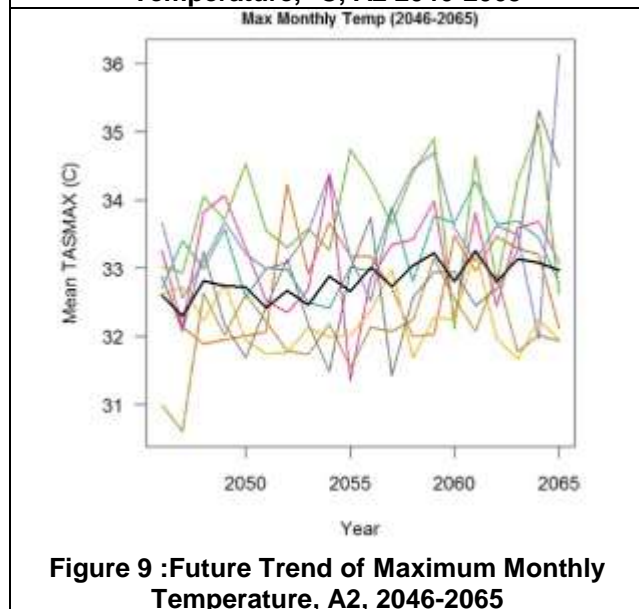
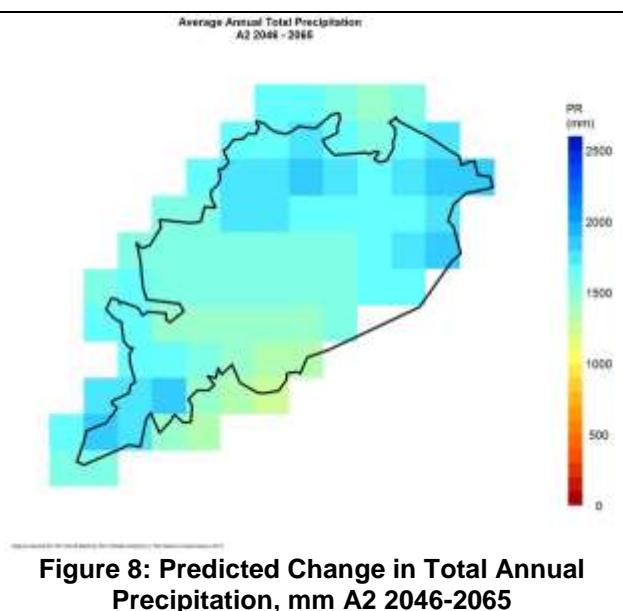
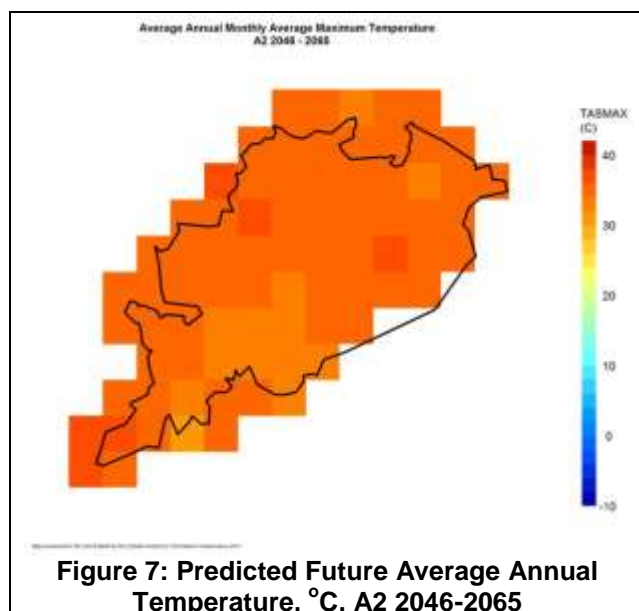
91. The associated environmental impacts are assessed considering present environmental setting of the project area, nature, and extent of the proposed activities. Impacts are analysed on both generic and specific nature and are classified as insignificant, minor, moderate, and major. Since the issues associated with most of the roads are similar, the impacts and mitigation measures given below are applicable to most of the subprojects. Any issue specific to a road is separately mentioned.

##### A. Common Impacts during Design and Construction Phase

##### 1. Climate Change Projection

92. **Temperature.** By the 2050s, there is a general increase in temperature in Odisha with the average annual maximum and minimum temperatures expected to increase from 31.07°C to 32.82 °C and 20.18°C to 22.41°C, respectively from the 1960-1991 reference period. The future annual maximum and minimum temperatures are expected to increase from 42.65°C – 44.72°C and 7.59°C-10.09°C, respectively. The number of warm days is also expected to be more frequent with a 36.07% more chances of the daily maximum temperature exceeding the 90<sup>th</sup> percentile of reference maximum temperature and the 44.512% more chances of the daily minimum nighttime temperature exceeds the 90<sup>th</sup> percentile of the reference minimum temperature.

93. **Precipitation.** The GCM ensemble predicts a slight increase in annual rainfall from 1378mm to 1418 mm. The number of wet days or when precipitation is greater than >0.2mm will decrease from 120 to 117 days but the rainfall intensity (>1mm/day) will increase from 15 to 16 days.



94. Figure Geographically, the highest temperatures will be experience in the interior districts of Dhenkanal and Debagarh. Marginally significant increase in rainfall is expected in Kendrapara, Baleswar, Sundargarh, and Gajapati districts.

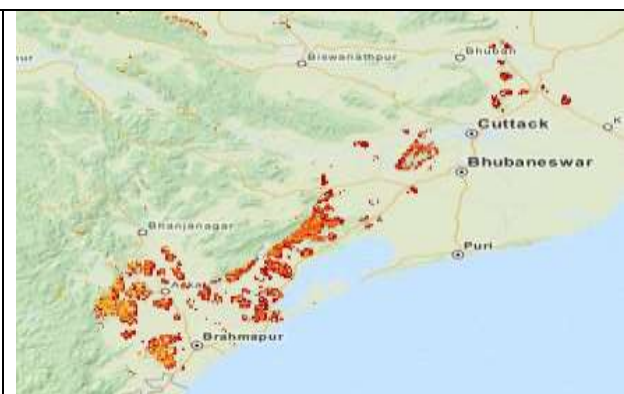
## 2. Natural Hazards and Climate Risks

95. The natural hazards that will be compounded by the projected increase in rainfall and temperature are flooding, landslide, vegetation fire, and tsunami. The east southeastern region of the state that covers the districts of Kedrapara, Jagatsinghpur, Puri, Cuttack, Jalapur, Bhadrak, and Khordha are prone to flooding having 5-50 flooding events per 100 years. Along the Bay of Bengal on the same region The Port City of Paradwip, Kendrapara District has history of being hit by a tsunami while the entire coastline from Paradwip to Puri is at risk. The interior districts of Kandhamal, Boudh, and Angul have historical high hazard for vegetation fire.





**Figure 11: Flood Risk, Odisha**



**Figure 12: Exposure to Landslide, Odisha**



**Figure 13: Exposure to Tsunami, Odisha**



**Figure 14: Risk of Forest Fires, Odisha**

96. **Mitigation Measures.** The succeeding Table presents the civil works component that address identified climate change risks. Although no attempt was made to segregate additional cost implications due to climate change from standard engineering design practices as stipulated in the IRC, the cost of addressing flooding and erosion for the RCIP Tranche 3 in the State is Rs 7,604 million of which Rs3,237M is for bridges and culvert construction and Rs2,340M is for increasing embankment height.

97. Compensatory tree plantations<sup>11</sup> (1:3) will be made to compensate the loss of trees for the construction of project roads of which 233 roads passing through forest areas on existing alignment. Additional efforts shall be made for tree plantation wherever feasible. All non-sample rural roads to be included in RCIP, will also be screened for climate change vulnerability and necessary mitigation measures shall be adopted for minimisation of identified vulnerability if any.

<sup>11</sup> ORRDA mostly undertake this activity through state forest department. The forest department plants tree either along the proposed roads if land is available otherwise on nearby degraded forest land.

### Rural Connectivity Investment Project (RCIP) – Tranche 3

Name of State: Odisha

Cost in Rs. Lakh

SI No	Road Name	District	Block	Length (Km)	Project Cost in the DPR	Length (m) located in flood prone Area	Length (m) in landslide prone area	Length (m) in Tsunami prone area	Cost of measures to address the risks (Rs.)			
									cross and Side Drains	bridges/ culverts	Inc. embankment height	Slope stab'n. (pitching, turfing etc.)
1	Tunga To Boulajodi	Kendrapara	Aul	5.45	367.16	5450.00	-	-	-	0.97	29.65	10.16
2	Hansina To Chakamanipur	Kendrapara	Rajnagar	12.00	766.18	-	-	-	-	92.39	-	28.42
3	R&B Road To Silapokhari	Kendrapara	Rajnagar	10.50	657.41	-	-	-	-	96.58	-	24.50
4	Alapua To Nandalalpatna	Kendrapara	Pattamundai	2.00	136.03	2000.00	-	-	-	3.31	4.39	22.72
5	P.W.D. Road To Badataila	Kendrapara	Rajkanika	5.90	396.18	-	-	-	-	77.65	-	18.55
6	Santhapada To Chakibanka Road	Kendrapara	Rajnagar	8.00	539.10	8000.00	-	-	-	41.89	43.28	47.49
7	Vedisahi To Banto Road	Kendrapara	Pattamundai	3.00	203.88	-	-	-	-	10.67	-	12.01
8	Irregation Embankment To Madhupada	Kendrapara	Rajkanika	4.65	313.00	-	-	-	-	35.56	-	11.48
9	R.D Road To Gharabhanjahola	Kendrapara	Rajkanika	6.10	416.96	6100.00	-	-	-	45.28	24.42	13.43
10	R.D. Road To Beta	Kendrapara	Aul	2.60	173.81	-	-	-	-	7.81	-	24.12
11	R.D Road To Bajpur	Kendrapara	Rajkanika	2.00	153.59	2000.00	-	-	-	47.37	5.88	3.28
12	R.D. Road To Padanipal	Kendrapara	Aul	5.16	405.70	5160.00	-	-	-	48.06	21.06	14.51
13	Mangarajpur To Deuli	Kendrapara	Pattamundai	4.10	279.94	1200.00	-	-	-	25.90	9.79	26.97
14	Mahulia To Pokharia Road	Kendrapara	Rajnagar	2.50	170.29	-	-	-	-	11.54	-	25.04
15	Brahmani Ghat To Nalapahi Road	Kendrapara	Aul	2.52	169.78	2520.00	-	-	-	14.34	11.68	4.68
<b>Sub-Total</b>				<b>76.48</b>	<b>5149.00</b>	<b>32430.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>559.32</b>	<b>150.15</b>	<b>287.36</b>
1	Nuagaon to Samantarapur	Jagatsinghpur	Balikuda	2.50	170.22	2500.00	-	700.00	-	9.22	23.98	36.84
2	Badjanga to Rankei	Jagatsinghpur	Tirtol	2.70	134.09	2700.00	-	120.00	-	10.46	19.34	20.67
3	Basandra to Bambilo	Jagatsinghpur	Biridi	4.70	291.78	4700.00	-	400.00	-	30.46	15.04	20.28
4	K.N.Pur to Itatikiri	Jagatsinghpur	Tirtol	3.35	168.62	3350.00	-	300.00	-	11.71	18.04	16.12
5	Kujanga Noliassahi RD Road - Janardhanpur	Jagatsinghpur	Erasama	1.30	75.84	1300.00	-	293.00	-	11.87	17.76	10.50
6	Santho to Alikanta	Jagatsinghpur	Balikuda	2.30	157.58	2300.00	-	450.00	-	39.68	25.32	7.88
7	Arakhakud to Harispur	Jagatsinghpur	Naugaon	5.00	347.21	5000.00	-	870.00	-	77.90	37.78	34.68
8	Erasama Chatua RD Road (Deika) to Dhobei	Jagatsinghpur	Erasama	3.00	168.01	3000.00	-		-		35.30	9.73
9	PWD Road 2nd km to Hazipur	Jagatsinghpur	Tirtol	2.50	141.41	2500.00	-	600.00	-	27.38	18.09	5.17
10	Nuapokhari to Dhunpur	Jagatsinghpur	Tirtol	10.10	532.07	10100.00	-	339.00	-	60.27	79.23	18.22
11	Kulanpur to Daraba	Jagatsinghpur	Balikuda	2.50	174.18	2500.00	-	550.00	-	29.36	9.50	29.34
12	Nuapokhari to Dianpur	Jagatsinghpur	Tirtol	1.70	84.52	1700.00	-	240.00	-	2.90	7.28	12.97
13	Rahana to Prasanpur	Jagatsinghpur	Balikuda	2.70	198.78	2700.00	-	120.00	-	58.93	24.29	5.80

14	Jaganathpur to Khaleri	Jagatsinghpur	Balikuda	2.50	170.64	2500.00	-	300.00	-	35.74	19.54	16.21
15	Bisanpur to Nirapoi	Jagatsinghpur	Tirtol	2.25	142.66	2250.00	-	-	-	26.01	14.48	15.55
16	Naharana to Sunadhar	Jagatsinghpur	Balikuda	6.70	418.31	6700.00	-	1500.00	-	33.36	44.28	87.39
17	Khatikolda to Ganeswarpur	Jagatsinghpur	Erasama	4.00	234.22	4000.00	-	205.00	-	21.58	44.66	14.11
	<b>Sub- Total</b>			<b>59.80</b>	<b>3610.12</b>	<b>59800.00</b>	<b>0.00</b>	<b>6987.00</b>	<b>0.00</b>	<b>486.83</b>	<b>453.91</b>	<b>361.46</b>
1	N.J. Sadak to Balipada-A	Puri	Kanas	2.40	157.97	2400.00	-	-	-	4.18	38.28	15.04
2	Badabhuin to Gangadharur	Puri	K.Prasad	1.10	76.80	1100.00	-	-	-	1.89	14.41	4.23
3	PWD road to Anandpur	Puri	K.Prasad	0.80	55.44	800.00	-	-	-	1.86	7.74	5.84
4	PWD road to Kamalasingh	Puri	K.Prasad	1.83	144.94	1830.00	-	-	-	15.25	24.49	15.37
5	Badajhada to Samantarapur	Puri	K.Prasad	2.20	152.98	2200.00	-	-	-	11.28	22.45	22.57
6	PWD road to Noliasahi	Puri	K.Prasad	2.30	158.01	2300.00	-	-	-	3.62	25.87	29.71
7	PWD road to Paikarapur	Puri	K.Prasad	1.10	84.73	1100.00	-	-	-	8.23	12.80	15.83
8	Siruli Project road to Jirakandi	Puri	Puri	1.10	64.12	1100.00	-	-	-	1.27	11.85	1.86
9	R.D. road to Kahneipur	Puri	K.Prasad	1.30	80.03	1300.00	-	-	-	1.79	11.56	8.16
10	Kasarda to Rajtei	Puri	Pipili	2.08	120.84	-	-	-	-	-	-	-
11	T-5 to Nalihana	Puri	Pipili	1.24	72.23	-	-	-	-	-	-	-
12	N.H.203 to Potal	Puri	Pipili	1.86	164.76	-	-	-	-	-	-	-
13	N.H.203 to Baragarh	Puri	Pipili	1.10	66.45	-	-	-	-	-	-	-
14	T-5 to Solana	Puri	Pipili	3.94	246.46	-	-	-	-	-	-	-
15	L-24 to Sarola	Puri	Pipili	1.20	74.04	-	-	-	-	-	-	-
16	N.H.203 to Malibarahi	Puri	Pipili	1.33	104.10	-	-	-	-	-	-	-
17	S.H.13 to Sunapada	Puri	Pipili	2.52	145.92	-	-	-	-	-	-	-
18	T-6 to Raigurupur	Puri	Pipili	1.00	73.60	-	-	-	-	-	-	-
19	T-6 to Subudhipada	Puri	Pipili	1.20	78.72	-	-	-	-	-	-	-
20	N.H.203 to Gobardhanpur S. Nagar	Puri	Pipili	2.00	123.83	-	-	-	-	-	-	-
21	T-4 to Jayapur	Puri	Delang	2.00	122.43	-	-	-	-	-	-	-
22	T-1 to Golapada	Puri	Delang	1.20	68.74	-	-	-	-	-	-	-
23	T-7 to Tikarpada	Puri	Delang	7.00	479.89	-	-	-	-	-	-	-
24	Algum PWD road to Baniasahi	Puri	Satyabadi	2.00	132.69	2000.00	-	-	-	5.22	30.32	19.16
25	Algum WD road to Bagasahi	Puri	Satyabadi	0.60	38.83	600.00	-	-	-	1.90	3.84	2.85
26	N.Someswarpur to Bastapada	Puri	Satyabadi	0.80	58.59	800.00	-	-	-	1.91	5.59	7.51
27	Budhang Canal to Balisahi	Puri	Satyabadi	2.02	114.14	2020.00	-	-	-	3.43	5.74	7.17
28	R.D. road to Otarakera	Puri	Satyabadi	2.50	177.54	2500.00	-	-	-	21.17	42.40	7.23
29	L-34 to Odasamal	Puri	Puri	2.00	137.64	-	-	-	-	-	-	-
30	R.D. road to Jagannathpur	Puri	Puri	2.50	178.10	2500.00	-	-	-	31.86	21.68	14.42
31	N.H.203 to Nilachakranagar	Puri	Puri	2.70	188.99	-	-	-	-	-	-	-
32	Malatipatpur R.D. road to Rahangiria via- Kanchinala Irrig. Embkt. (Golasahi)	Puri	Puri	7.00	489.44	-	-	-	-	-	-	-
33	N.H.203 to Apila	Puri	Puri	4.80	227.41	4800.00	-	-	-	6.66	18.41	20.12
34	N.J. Sadak to Karadi	Puri	Puri	1.80	108.27	1800.00	-	-	-	4.95	12.06	7.36
35	RD Road to Sahaspur	Puri	Brahmagiri	3.28	262.26	3280.00	-	-	-	18.62	50.39	28.45

36	L-76 to Jagannathpur	Puri	Brahmagiri	0.60	49.33	600.00	-	-	-	3.12	5.23	6.27
37	N.H.203A to Gokhara	Puri	Brahmagiri	1.60	119.48	1600.00	-	-	-	16.92	13.63	10.30
38	N.H.203 A to Bentapur	Puri	Brahmagiri	1.66	118.24	1660.00	-	-	-	4.44	15.60	16.31
39	L-58 to Baghalanji	Puri	Brahmagiri	2.01	143.31	2010.00	-	-	-	17.24	23.82	8.82
40	R.D. road to Haridas	Puri	Brahmagiri	2.57	170.45	2570.00	-	-	-	20.70	13.47	21.07
41	PWD road to Mirzapur	Puri	Brahmagiri	0.75	62.75	750.00	-	-	-	10.28	8.87	6.15
42	L-69 to Danduasipada	Puri	Brahmagiri	2.09	155.34	2090.00	-	-	-	16.93	24.04	12.36
43	Sikatnuapada to Sisupur	Puri	Brahmagiri	1.00	74.32	1000.00	-	-	-	4.19	9.37	16.61
44	R.D. Road dto Maitratrilochanpur	Puri	Kanas	1.80	110.08	1800.00	-	-	-	6.87	7.82	3.80
45	R.D. road to Delang Charipada	Puri	Kanas	3.50	220.99	3500.00	-	-	-	24.16	42.79	21.05
46	L-28 to Rudhupur	Puri	Kanas	8.00	515.84	8000.00	-	-	-	37.69	106.14	40.81
47	Gadakharada to Malisahi	Puri	Kanas	2.50	169.11	2500.00	-	-	-	14.55	17.57	8.99
48	R.D. road to Jamuna	Puri	K.Prasad	3.77	345.78	3770.00	-	-	-	53.72	70.42	36.70
49	R.D. Road to Mahanisa	Puri	K.Prasad	3.00	233.81	3000.00	-	-	-	13.36	51.45	18.01
50	PWD road to Anlakuda	Puri	K.Prasad	1.90	140.36	1900.00	-	-	-	3.92	33.36	8.87
51	Bhawanipur to Parala	Puri	K.Prasad	1.67	118.18	1670.00	-	-	-	3.96	24.11	8.96
52	Manikpatna to Sebakpur	Puri	K.Prasad	2.70	200.10	2700.00	-	-	-	11.42	48.83	10.07
53	PWD road to kandeswar	Puri	K.Prasad	2.80	207.63	2800.00	-	-	-	11.95	49.62	23.96
54	Naba to Samantarapur	Puri	K.Prasad	1.71	124.31	1710.00	-	-	-	10.35	26.63	12.21
55	Badadanda to Khamunha	Puri	K.Prasad	1.00	78.95	1000.00	-	-	-	1.81	17.28	16.50
56	R.D. road to Adalabad	Puri	K.Prasad	1.00	74.81	1000.00	-	-	-	2.33	15.50	12.10
57	Podaguna to K.S. Patna	Puri	Pipili	1.30	84.73	-	-	-	-	-	-	-
58	P.K Road to Porakana	Puri	Nimapara	3.00	191.79	1000.00	-	-	-	33.87	19.97	9.85
59	RD Road to Simili	Puri	Gop	1.50	96.92	1500.00	1000.00	1500.00	-	9.64	-	9.56
60	Bamnal to Tihula	Puri	Nimapara	5.00	361.81	5000.00	-	-	-	123.15	49.75	9.78
61	M.B Road to Khadisa	Puri	Gop	6.00	393.73	-	-	-	-	-	-	-
62	Mohanty sahi (L-34) to Morada	Puri	Gop	1.50	93.30	-	-	-	-	-	-	-
63	R.D Road to Desunthi	Puri	Gop	3.00	202.22	1000.00	1000.00	-	-	30.82	-	9.87
64	Edbansa to Paikhala	Puri	Astaranga	1.90	136.56	1700.00	-	-	-	26.33	17.61	9.40
65	RD Road to Balibasta	Puri	Gop	2.30	138.83	1500.00	-	-	-	10.04	19.87	28.50
66	Padmapur to Rudupur	Puri	Satyabadi	0.70	40.02	-	-	-	-	-	-	-
67	T-5 to Chhatahar	Puri	Nimapara	3.20	220.57	500.00	-	-	-	38.46	9.67	9.91
68	P.K Road to Arilo	Puri	Nimapara	4.35	280.94	500.00	-	-	-	49.97	9.93	9.87
69	Tititngapada to Kantilo	Puri	Nimapara	2.00	146.46	-	-	-	-	-	-	-
70	L-28 to Osihan	Puri	Astaranga	2.10	132.09	-	-	-	-	-	-	-
71	Manduki to Olara	Puri	Astaranga	2.65	165.25	-	-	-	-	-	-	-
72	L-23 to Olihan	Puri	Astaranga	1.80	120.88	-	-	-	-	-	-	-
73	Rudupur to Malasahi	Puri	Satyabadi	1.60	99.64	-	-	-	-	-	-	-
74	RD Road to Soma	Puri	Gop	1.50	97.02	500.00	-	-	-	14.92	-	19.17
75	Baulanga to Panchena	Puri	Gop	3.06	208.57	1500.00	1500.00	-	-	50.38	-	25.67
76	L-47 to Badaola	Puri	Astaranga	2.47	174.56	-	-	-	-	-	-	-
77	Gabakunda to Chakarapada	Puri	Satyabadi	1.30	72.99	-	-	-	-	-	-	-

78	PWD Road (T3) to Osalanga	Puri	Kakatpur	1.55	104.85	-	-	-	-	-	-	-
79	RD Road to Ampada	Puri	Gop	3.00	192.64	-	-	-	-	-	-	-
80	R.D. Road Karanjapur	Puri	Astaranga	1.55	94.14	-	-	-	-	-	-	-
81	PWD Road (T-2) to Silari	Puri	Astaranga	4.20	266.33	-	-	-	-	-	-	-
82	Porakana to Juanlo	Puri	Nimapara	1.50	104.31	500.00	-	-	-	21.54	4.98	4.93
	<b>Total</b>			<b>187.46</b>	<b>12685.22</b>	<b>97260.00</b>	<b>3500.00</b>	<b>1500.00</b>	<b>0.00</b>	<b>844.10</b>	<b>1117.21</b>	<b>699.31</b>
1	Paikasahi(Nurpatna) to Chanchapada	Cuttack	Cuttack Sadar	5.00	306.47	-	-	-	-	-	-	-
2	Paikasahi(Nurpatna) to Chanchapada	Cuttack	Cuttack Sadar	5.73	353.63	-	-	-	-	-	-	-
3	Balipada to Dihigop(0/0 Km to 0/4000Km)	Cuttack	Mahanga	4.00	249.28	-	-	-	-	-	-	-
4	Balipada to Dihigop(4/000 Km to 9/900Km)	Cuttack	Mahanga	5.90	341.40	-	-	-	-	-	-	-
5	Balipada to Dihigop(9/900 Km to 15/200Km)	Cuttack	Mahanga	5.30	312.67	-	-	-	-	-	-	-
6	Bhoipada to Sadhusahi	Cuttack	Cuttack Sadar	6.94	438.60	207.00	-	-	-	88.13	-	6.73
7	Bhoipada to Sadhusahi	Cuttack	Cuttack Sadar	4.08	261.37	230.00	-	-	-	43.90	-	8.82
8	Kulia to San Routpati	Cuttack	Nischintakoili	4.87	313.74	-	-	-	-	-	-	-
9	Kulia to San Routpati	Cuttack	Nischintakoili	3.22	197.01	-	-	-	-	-	-	-
10	Kulia to San Routpati	Cuttack	Nischintakoili	6.32	377.26	-	-	-	-	-	-	-
11	Nuagarh to Bhuska	Cuttack	Narsinghpur	3.80	244.58	-	-	-	-	-	-	-
12	Badakambilo to Chhanchunia	Cuttack	Baramba	9.00	574.64	-	-	-	-	-	-	-
	<b>Total</b>			<b>64.16</b>	<b>3970.65</b>	<b>437.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>132.03</b>	<b>0.00</b>	<b>15.55</b>
1	Kayan to Ichhapur	Jajpur	Dasarathpur	6.32	698.34	3000.00	-	-	-	384.13	43.83	3.16
2	N.H.- 5A to Badatrilochanpur	Jajpur	Korei	0.75	40.31	750.00	-	-	-	9.52	5.25	0.32
3	R.D. Road to Nuagada	Jajpur	Korei	3.00	163.50	2000.00	-	-	-	37.23	32.16	1.98
4	RD Road to Andhalo	Jajpur	Binjharpur	7.50	405.18	5000.00	-	-	-	46.94	62.11	3.97
5	P.W.D. Road to Sidheswarapur	Jajpur	Dasarathpur	5.00	287.56	5000.00	-	-	-	36.47	58.96	3.33
6	RD Road to Arjunajhar	Jajpur	Sukinda	5.00	272.02	-	-	-	-	46.16	39.82	1.29
7	Rampur Sagadi to Bengamadhapur	Jajpur	Korei	1.35	72.87	1350.00	-	-	-	17.86	11.09	0.79
8	PWD Road to Sanadogada	Jajpur	Dasarathpur	6.00	325.30	6000.00	-	-	-	39.59	55.90	2.79
9	R.D. Road to Jundupur	Jajpur	Dasarathpur	7.55	461.26	7550.00	-	-	-	83.23	90.33	4.21
10	Expressway to Jandapal	Jajpur	Danagadi	1.95	105.71	-	1950.00	-	-	22.57	14.51	0.82
11	R & B road to Krushnaposi	Jajpur	Dharmasala	2.35	128.77	1500.00	-	-	-	24.26	21.29	7.28
12	RD road Madhusudanpur to Tarasha	Jajpur	Dharmasala	3.00	160.77	2500.00	-	-	-	13.62	32.32	12.02
13	Bajabati to Khunta	Jajpur	Dharmasala	2.95	157.06	1000.00	-	-	-	11.18	32.74	22.42
14	R & B road to Majhipatna	Jajpur	Dharmasala	2.85	144.77	2000.00	-	-	-	18.79	28.54	4.16
	<b>Sub-Total</b>			<b>55.57</b>	<b>3423.4</b>	<b>37650.0</b>	<b>1950.00</b>	<b>0.00</b>	<b>0.00</b>	<b>791.55</b>	<b>528.85</b>	<b>68.54</b>

					2	0						
1	Barsar to Madhupur	Bhadrak	Tihidi	5.00	299.10	2500.00	-	-	-	-	-	25.20
2	Asura to Trisalpur	Bhadrak	Bhadrak	4.50	236.80	4000.00	-	-	-	-	-	50.40
3	PWD Road to D S Bindha	Bhadrak	Bhadrak	3.00	163.19	3000.00	-	-	-	-	-	37.80
4	Barahanuapada	Bhadrak	B.Pokhari	3.00	173.56	3000.00	-	-	-	-	-	37.80
5	T2 to Mudhapada	Bhadrak	B.Pokhari	3.00	163.97	3000.00	-	-	-	-	-	37.80
6	PWD Road to Dinajpur	Bhadrak	Dhamangar	3.70	216.26	-	-	-	-	-	-	-
7	PWD Road to Tarabantia	Bhadrak	Dhamangar	2.70	145.78	-	-	-	-	-	-	-
8	(A) T2 to Nawarangapur	Bhadrak	B.Pokhari	2.50	130.07	2500.00	-	-	-	-	-	31.50
9	(B) T2 to Surubana	Bhadrak	B.Pokhari	3.20	179.94	-	-	-	-	-	-	-
10	T1 to Sarapada	Bhadrak	B.Pokhari	4.90	270.36	-	-	-	-	-	-	-
11	T3 to Bankamuhana	Bhadrak	B.Pokhari	4.80	273.88	3500.00	-	-	-	-	-	44.10
12	T3 to Pithiasenda	Bhadrak	Chandabali	5.50	297.83	5500.00	-	-	-	-	-	69.30
13	PWD Road to Mishrapur	Bhadrak	Basudavpur	4.00	218.96	-	-	-	-	-	-	-
14	(A) L42 to Kuali	Bhadrak	Basudavpur	5.50	306.33	-	-	-	-	-	-	-
15	(B) T2 to Purusotampur	Bhadrak	Basudavpur	1.50	86.37	-	-	-	-	-	-	-
16	PWD Road to Samia	Bhadrak	Basudavpur	1.50	84.99	-	-	-	-	-	-	-
17	Eram Road to Olagada	Bhadrak	Basudavpur	6.50	383.53	-	-	-	-	-	-	-
18	Chardiha to Rajendrapalli	Bhadrak	Chandabali	3.20	180.79	3200.00	-	-	-	-	-	40.32
19	T6 to Kandisahi	Bhadrak	Chandabali	2.20	124.92	2200.00	-	-	-	-	-	27.72
20	T-1 to Uttarbad	Bhadrak	B.Pokhari	4.00	233.30	-	-	-	-	-	-	-
21	Dosinga to Oramal	Bhadrak	Chandabali	4.00	223.72	-	-	-	-	-	-	-
22	PWD Road to Jignipur	Bhadrak	Basudavpur	4.00	215.89	-	-	-	-	-	-	-
23	PWD Road to Bhoisahi	Bhadrak	Basudavpur	4.70	261.38	-	-	-	-	-	-	-
	<b>Sub -Total</b>			<b>86.90</b>	<b>4870.92</b>	<b>32400.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>401.94</b>
1	Badanayapalli to Suanal	Khurda	Bolagarh	4.00	241.95	-	-	-	5.10	42.17	-	2.71
2	RD road to Ekadalia	Khurda	Bolagarh	2.11	143.99	-	-	-	1.69	37.94	-	1.15
3	Kalanga to Paikasahi via Phiripirapatna	Khurda	Bolagarh	2.02	135.61	-	-	-	2.72	23.69	-	1.57
4	Deuli to Talatumba road	Khurda	Bolagarh	2.50	170.31	-	-	-	1.71	38.81	-	2.03
5	Nalasingh to Totapada	Khurda	Tangi	3.20	197.84	-	-	-	0.85	34.42	-	0.33
6	Balipatna RD road to Hotasahi	Khurda	Balianta	2.40	164.48	1500.00	-	-	-	29.09	-	20.25
7	Prataprudrapur to Nuasahi	Khurda	Balianta	2.90	191.24	1200.00	-	-	4.35	20.26	-	28.59
8	PMC to Bhaichuamandagada	Khurda	Balianta	3.30	225.85	1900.00	-	-	2.62	24.56	-	25.11
9	Balianta to Chandanbasta	Khurda	Balianta	3.25	228.64	2000.00	-	-	-	53.75	-	13.59
10	Nariso Meladanda to Chandiapada	Khurda	Balipatna	2.30	156.11	1700.00	-	-	-	29.87	-	8.84
11	Nariso to Badapokharisahi	Khurda	Balipatna	2.00	135.88	500.00	-	-	2.73	16.02	-	20.62
12	Bisuniapada to Balamala	Khurda	Balianta	1.50	95.48	1100.00	-	-	-	6.95	-	4.76
13	Bhargabi Right Embankment to Terabatia	Khurda	Balianta	2.90	193.29	2000.00	-	-	1.74	10.89	12.00	7.24
14	Dalakasati Sanmachhapur	Khurda	Balipatna	3.00	199.56	2400.00	-	-	1.82	24.00	15.00	6.45

15	Madhuban Darada road to Deulapokhari	Khurda	Balipatna	1.86	113.24	1510.00	-	-	1.75	4.29	5.00	3.00
16	Bhakarsahi to Naranpur	Khurda	Balipatna	3.15	226.41	2850.00	-	-	-	-	60.54	10.95
17	R D road to Kandha Ambajhar	Khurda	Banapur	2.00	113.43	-	-	-	-	6.23	-	2.90
18	Naranagarh Girls High School to Bhogapur	Khurda	Khurda	2.16	127.03	-	-	-	3.18	20.53	-	0.73
	<b>Sub-Total</b>			<b>46.55</b>	<b>3060.34</b>	<b>18660.00</b>	<b>0.00</b>	<b>0.00</b>	<b>30.26</b>	<b>423.47</b>	<b>92.54</b>	<b>160.82</b>
	<b>Grand Total</b>			<b>576.92</b>	<b>36769.65</b>	<b>278637.00</b>	<b>5450.00</b>	<b>8487.00</b>	<b>30.26</b>	<b>3237.30</b>	<b>2342.66</b>	<b>1994.98</b>

### 3. Finalization of Alignment

98. **Impact:** The proposed rural roads will be constructed to provide 7.5 m roadway in **accordance** with PMGSY guidelines and technical specifications (IRC-SP 20: 2002) for plain terrain. Sample rural roads utilize existing road alignment usually of earthen track with some stretches of brickbat soling. The existing road passes through plain terrain and primarily agriculture areas. None of the sample roads passes close to any protected monument or protected areas. Impacts due to road alignment and design is expected to be minor and limited to shifting of some common utilities, community structures (e.g. temple, school), and cutting of trees falling within road way.

99. **Mitigation Measures:** The road alignment is finalized considering availability of right-of-way (RoW). The RoW is reduced in built up area or constricted areas to minimize land acquisition. The road alignment has also been modified to minimize tree cutting, shifting of utilities or community structure to the extent feasible. Some of the measures taken include widening of the road on the opposite side of a tree that should be preserved or using retaining wall to minimize the road width to 5m wherever required. The road is aligned to follow natural topography to avoid unnecessary cut and fill. All future roads to be included in RCIP will follow above measures. In addition these subprojects will comply with the following criteria for alignment finalization:

100. The road will be part of district core network and will comply with PMGSY guidelines.

- Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
- Subproject will not pass through any designated wildlife sanctuaries, national park, notified Eco sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area.
- Subproject to comply with local and National legislative requirements (such as forest clearance for diversion of forest land ) and ADB's Safeguard Policy Statement 2009.

### 4. Land Acquisition

101. **Impact:** No land acquisition is involved due to various measures considered for finalization of road alignment. Villagers have volunteered to donate their land if at certain stages land is required for geometrical correction or alignment adjustment for avoiding tree cutting or shifting of community structure. There could be some impact on the encroachers; however, most of them have also volunteered to shift from the proposed alignment. Due diligence on these aspects have been conducted separately and reported in the social compliance reports.

102. **Mitigation Measures:** All efforts shall be made to minimize the land acquisition while finalizing the alignment. In an unavoidable situation, first adopt suitable engineering measures to reduce the ROW requirement or donation of land from land owners. In the encroached areas, efforts shall be made to restricted road construction to the available space.

### 5. Protected Areas (National parks, Wildlife Sanctuaries, Eco-sensitive zones, protected /historical monuments) and Forest Areas



103. **Impact:** Debrigah Sanctuary is located in Bargarh district but none of the sample road is located within 10 km radius. None of the sample road passes through any forest land (except Talamaniaga to Uppar Maninaga road in Ranapur block of Nayagarh district) and as such, project has no impact on forest cover of the state. Odisha is also known to have several archaeological monuments and historical monuments spread all over the state. However, none of them is located within 5 km of sample roads.

104. **Mitigation Measures:** As there are no Protected/Ecologically sensitive areas in the subproject areas, no such measures are proposed. In case of a diversion of forest land, prior forest clearance shall be obtained under Forest (Conservation) Act 1980 (amended 1988).

## 6. Land Clearing Operations

105. **Impact:** The site clearing operations may have impact on common utilities, community properties, land use and vegetation profile of the area if adequate considerations not given to road alignment finalization, utility and community structure shifting plan, tree felling, and demolition waste disposal.

106. **Mitigation Measures:** The following steps shall be taken to minimize the associated impact with land clearing operations:

- The land clearing operation should be undertaken as per the defined road alignment and community structure, utility and road furniture shifting plan.
- The road land width shall be clearly demarcated on the ground.
- The utility and community structure shifting shall be as per plan and with consultations and concurrence of the community.
- Tree felling shall be limited to those which could not be saved even by design measures. The tree shall be cut with a permission of Forest Department. The vegetable cover shall be removed and disposed in consultation with community.
- All public utilities shall be shifted with a concurrence of respective agencies/authority and to the adjacent location approved by them. The top soils shall be collected and preserved for reuse as a base for turfing of embankment slopes or development of barren areas along roadside. The top soil shall be preserved at identified location with the provision of watering /grass development on the heap surface to prevent air pollution.

## 7. Cut and Fill and Embankment construction

107. **Impact:** Inadequate alignment planning may increase the cut and fill requirement as well as need for more borrow earth for embankment formation leading to some impact on land use. Inadequate provision for drainage and embankment slope protection may lead to soil erosion. Due consideration is given to above aspect for alignment finalization of sample road. With the adoption of appropriate mitigation measures, the impact due to above activity on land use and other environmental component is expected to be minimal.

108. **Mitigation Measures:** The alignment design shall consider options to minimize excessive cuts and fills. The cut and fill quantities shall be used for embankment to minimize borrow earth requirement. The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage. Adequate provision shall be made for cross drainage structures

for maintaining natural drainage pattern in the subproject area and preventing soil erosion. The top soil of the cut and fill area shall be used for embankment slope protection.

## **8. Establishment of Construction Camp, Temporary office and Storage Area**

109. **Impact:** The congregation of labor population and technical staff in the subproject area during the construction phase will put considerable stress on the limited resources of village areas. Some of the associated impacts are related to health, safety of the laborers at the construction campsites, availability of safe drinking water, and sanitation.

110. The establishment of construction camp temporary office and storage area will reduce land productivity if these are established on agricultural land. Loading and unloading of construction material, transportation of material, handling of fuel and waste disposal from these areas may have direct and indirect impact on soil, water and air quality

111. **Mitigation Measures:** The following steps shall be taken to minimize/reduce these impacts:

- Construction campsites shall be located away from any local human settlements (minimum 500m away) and preferably located on lands, which are not productive barren/waste lands presently. Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m).
- The construction camps, office and storage areas shall have adequate water supply, sanitation and all requisite infrastructure facilities. This would minimize dependence of construction personnel on outside resources, presently being used by local populace and minimize undesirable social friction thereof.
- The construction camps shall be located at a minimum 5 km from forest land/areas to deter the construction labor in trespassing. Similarly, temporary office and storage areas shall be located at a minimum 1 km from forest land/areas.
- The construction camps, office and storage areas shall have septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use.
- All construction camps shall have rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided completely to the extent possible.
- The construction camps, office and storage areas shall have health care facilities for adults, pregnant women and children.
- All construction personnel shall be subjected to routine vaccinations and other preventive/healthcare measures.
- Contractor shall arrange all personal protective equipment (PPEs) like helmet, boots, and earplugs for workers, first-aid and fire fighting equipment at construction sites. An emergency plan shall be prepared to fight with any emergency like fire.
- Garbage bins must be provided in the camp and regularly emptied and disposed off in a hygienic manner. Domestic solid waste shall be disposed of in a control manner. The recyclable waste shall be sold off and non saleable and biodegradable waste shall be disposed through secured land filling.
- All fuel oil/lubricant unloading and storage shall be made on the paved areas away from storm water drainage.

- After completion of construction work, the camp /temporary office/storage areas sites shall be restored to its original condition.

## 9. Traffic Movement

112. **Impact:** Construction work along the existing road could cause disturbances to traffic movements. It will also pose risk of accident to motorist at night if these blockages and disruption are not clearly demarcated.

113. **Mitigation Measures:** The contractor will prepare appropriate traffic diversion scheme, which shall be implemented in different stretches of the road as per the progress of the construction work. This plan shall be approved by PIU and implemented not later than 15 calendar days before the start of any construction work on a specific section to avoid any inconvenience to the present road users. The diversion plan should ensure smooth flow of traffic, minimize accidents to road users during construction works. Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and visible and retro reflective in nature for day and night visibility.

## 10. Associated Impacts due to Construction Activities

### a. Loss of productive soil, erosion and land-use

114. **Impact:** No land use will change due to the project, since required ROW is available throughout the alignment. Land use though will change temporarily of construction camp, temporary office storage areas for the period of construction. This will also result in loss of soil productivity. Soil erosion may take place along steep and un-compacted embankment slope, and wherever vegetation is cleared. Soil erosion may have cumulative effect viz. siltation, embankment damage, drainage clogging etc. The siltation, due to soil erosion may occur only in the ponds located close to the roads. Loss of soil due to run off from earth stockpiles may also lead to siltation. Land use may also change due to borrowing the earth.

115. **Mitigation Measures:** 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 back to land owner. The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion. The topography of all the sample roads through out the stretch is plain except in case of 2 roads where it is undulating for very small stretches. Therefore, cut and fill shall be planned as per IRC provisions and rural road manual. All steep cuts shall be flattened and benched. Shrubs shall be planted in loose soil area. IRC: 56 -1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration. Soil erosion shall be visually checked on slopes and embankment areas. If soil erosion observed, suitable measures shall be taken to control it.

### b. Borrow Areas and Quarries

116. **Impact:** Borrow areas if left un-rehabilitated may pose risk to people, particularly children and animals of accidentally falling into it. This may also become potential breeding ground for mosquitoes and vector born disease. Illegal quarrying may lead to unstable soil condition; destroy the landscape of the terrain, air and noise pollution.

117. **Mitigation Measures:** Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth **shall** be borrowed from already low-lying areas. The borrow earth shall be sourced from identified locations and with prior permission of landowner and with clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and quantity that can be borrowed. The borrow area shall be located/ rehabilitated as per the guidelines given at **Appendix 4**. Fly ash shall also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment. The stone aggregate shall be sourced from existing licensed quarries only. The quarry should have requisite consent to operate from State Pollution Control Board. No new quarry shall be opened for the proposed project.

### c. Hydrology and Drainage

118. **Impact:** The activities involved with proposed road development may alter the hydrology and drainage pattern of the area in absence of adequate provision for cross drainage structure, construction wastes disposal and drainage in habitat areas.

119. None of the sample roads is crossing any natural stream except NH-55 to Siridihi (A) road in Dhenkanal district, which crosses Sarapa Nallah. No flooding is reported from this river except stagnation of water along the road. Certain subproject roads are cross local and seasonal drains. Village ponds are also located close to few roads. As such impact on hydrology and drainage pattern is expected to be minimal.

120. **Mitigation Measures:** The provision of adequate cross drainage structures shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. The construction work shall be planned in dry season so that water quality of the water channel is not affected due to siltation. Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment and to ensure minimum disturbance to natural drainage of surface and subsurface water of the area. Provision of additional cross drainage structures shall be made in the areas where nearby land is sloping towards road alignment in both the both sides.

121. Provision of CC road construction in habitat area with drainage of both side of the road shall be made as per the design specifications and with adequate slope to prevent any water logging.

### d. Compaction and Contamination of Soil

122. **Impact:** Soil in the adjoining productive lands beyond the ROW, haulage roads, and construction camp area may be compacted due to movement of construction vehicles, machineries, equipments and construction camps/storage facilities. It may get contaminated due to inappropriate disposal of liquid waste, (lubricating oil and fuel spills, waste oil and lubricant and vehicle/equipment washing effluent) and solid waste (fuel filters, oily rags) likely to be generated from repair and maintenance of transport vehicles, construction equipment and machinery.

123. **Mitigation Measures:** 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. 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 segregated into biodegradable and non-biodegradable waste. The non-biodegradable and recyclable waste shall be sold off. 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 minimize 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 SPCB/ MoEF authorized re-refiners.

#### **e. Construction Debris and Wastes**

124. **Impact:** Uncontrolled disposal of debris and waste may create unhygienic and unsafe condition around the disposal areas.

125. **Mitigation Measures:** All excavated materials from roadway, shoulders, verges, drains, cross drainage shall be used for embankments formation if feasible, filling pits, and landscaping. 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 secure landfill sites only in environmentally accepted manner. MOSRTH guidelines shall be followed for debris, wastes removal and disposal at unproductive/wastelands which shall be selected with the consent of villagers and Panchayat. The dumping site should be of adequate capacity and to be located away from residential areas (at least 1,000 m away). It should also be located away from water bodies to prevent any contamination of these bodies.

#### **f. Air Quality**

126. **Impact:** The potential sources of air emission during the construction phase of the project are given below which can cause localised air pollution:

127. Dust from earth works (during site preparation).

- Emissions from the operation of construction equipment and machines.
- Fugitive emissions from vehicles plying on the road, during the transport of construction materials.
- Emissions other than dust particularly from the hot mix plants and laying of bitumen. Hot mix plant will generate carbon monoxide (CO), un-burnt hydrocarbon (HC), sulphur dioxide (SO<sub>2</sub>), particulate matters (PM), and nitrogen oxides (NO<sub>x</sub>) emissions.
- Localized increased traffic congestion in construction areas. Most of the emissions will be in the form of coarse particulate matter, which will settle down in close vicinity of construction site. This may affect the air quality of nearby areas, especially, due to emission discharge from low height of the stack.

128. **Mitigation Measures:** All these impacts will be temporary and hence, no significant impact is envisaged. The following measures will be taken to minimize these:

- Vehicles delivering loose and fine materials like sand and aggregates shall be covered.

- Dust suppression measures like water sprinkling<sup>12</sup>, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing plant areas.
- Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements.
- Material storage areas shall also be located downwind of the habitation area.
- Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by state pollution control board (SPCB) to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State Pollution Control Board and comply with all consent conditions.
- Diesel Generating (DG) sets shall also be fitted with stack of adequate height. Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained.
- The requisite PPE (helmet, mask, boot, hand gloves) shall be provided to the construction workers.

#### **g. Noise Quality**

129. **Impact:** Ambient noise level may increase temporarily in the close vicinity of various construction activities, maintenance workshops, vehicles movement and earthmoving equipment.

130. **Mitigation Measures:** The noise level will be intermittent and temporary and will attenuate fast with increase in distance from noise source. Further, vehicles and equipment should be fitted with silencers and maintained regularly. The workers shall be provided with personal protection devices such as earplugs and earmuffs.

#### **h. Groundwater and Surface Water Quality and Availability**

131. **Impact:** Water will be required for compaction of formation and domestic purposes in the workers camp. These requirements will be mainly sourced from groundwater. Any uncontrolled abstraction of ground water can deplete the ground water table. Contamination of groundwater is not envisaged since all construction camps will have septic tanks or mobile toilets depending on the number of workers in each camp. The drinking water supply to the habitat is primarily through hand pumps and bore wells. No significant impact is anticipated on surface water bodies except probability of siltation during construction. Due to non-perennial nature of surface water bodies, water requirements for drinking and construction purpose shall be met from ground water sources.

132. **Mitigation Measures:** Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority<sup>13</sup> if applicable. 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 summer period to the extent feasible. Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting. Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall

<sup>12</sup> Water suppression of fugitive dust can reduce emissions from 12% to 98%.

<sup>13</sup>As per Central Ground Water Authority (CGWA), there are 43 notified blocks in India where prior permission is required for extraction of ground water. Currently there are no notified areas in Chhattisgarh state. CGWA is continually updating the list of notified areas.

intensity. Measures are already purposed in earlier section for prevention of siltation in water bodies.

#### **i. Biological Environment**

133. **Impact:** Since the sample roads are not passing through any protected areas or forest area, there is no diversion of forest land. The major adverse impacts will be due to tree cutting, Siltation and contamination of water bodies may affect the aquatic life. Since the aquatic life is minimal and no significant impact is anticipated on aquatic life.

134. **Mitigation Measures:** All efforts shall be taken to avoid tree cutting wherever possible. Requisite permission from forest department shall be obtained for cutting of roadside trees. Compensatory Afforestation shall be made on 1:3 ratio basis. Additional trees shall be planted wherever feasible. All care shall be taken to avoid siltation/contamination of water bodies. Movement of herbivores like cattle, goats, and cows, have been observed in the surrounding agriculture fields. Disturbance to these animals will be avoided to the extent possible.

#### **j. Impact on Common Property Resources**

135. **Impact:** There are public utilities like electric transformers, electric poles, and hand pumps all along the project rural roads. The road construction may require shifting of these utilities. There are many community structures like school, playground village office temples.

136. **Mitigation Measures:** All efforts are made to minimize shifting of common utilities and community structures. ROW has been reduced in constricted areas with appropriate engineering measures to minimize land acquisition and shifting of community structures. The community structures/utilities which can not be saved will be shifted to adjacent area with the concurrence and in consultation with community.

#### **k. Chance find artifacts**

137. **Impact:** The project entail risk/damage to cultural properties and has likelihood of chance-finds.

138. **Mitigation Measures:** The Ancient Monuments and Archaeological Sites and Remains Act, 1958 requires the protection of all cultural and historical remains found in the project area. The contractor will ensure that none of the ancient monuments and archeological sites of importance are not affected due to the proposed project road and all construction related activities shall necessarily avoid such sites. All chance find artifacts shall be owned by the state and upon discovery all works around the area will cease and the Contractor will seek further guidance from the PIU and PIC. The Contractor will secure the discovery site.

### **B. Common Impacts during Operation Phase**

#### **1. Air Quality**

139. **Impact:** Decrease in air quality due to increase in traffic, idling at congestions.

140. **Mitigation Measures:** The bad road condition is the main cause of poor air pollution at present along the project roads. The improved road conditions will result in the improved ambient air quality. Also, the subproject road is largely traversing through vast open agriculture

areas, which will provide adequate dispersion to gaseous pollutants, generated from vehicles and will offset the increased pollutants.

## 2. Noise

141. **Impact:** During the operational phase, movement of traffic will be the prime source of noise. Traffic congestion and pedestrian interferences increase the use of horns. This may result in increased noise levels at habitat areas, nearby schools and religious places.

142. **Mitigation Measures:** Awareness signboard shall be provided for safe driving near the habitat areas. Speed limitation and honking restrictions may be enforced near sensitive locations.

## 3. Land, Soil, Tree Plantation

143. **Impact:** The better access can lead to conversion of agriculture land for residential and commercial purposes close to roads, which may result in loss of productive land and agricultural produce. Since the rural road are aimed at connecting the villages, and with the general trend of migration of rural population to urban areas, the phenomena of conversion of agriculture land to residential area is unlikely to change.

144. The land occupied for construction camp /temporary office/material storage area will remain unproductive if it is not restored after completion of construction activities.

145. Since the habitat in the project area is already modified and the only vegetation that will be planted are the trees for purposes of compensatory plantation, it will be essential to ensure the survivability of the compensatory tree planted

146. **Mitigation Measures** It shall be ensured that all construction camp/temporary office/material storage areas are restored to its original conditions. The borrow area rehabilitation will also be ensured as per the agreed plan with the landowner. Contractor and PIC will ensure the same and obtained clearance from PIU before handing over the site to SRRDA.

147. The PIC will undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required.

## 4. Groundwater

148. No impact is anticipated on groundwater due to the project during operation phase, hence, no specific mitigation is proposed.

## 5. Hydrology and Drainage

149. **Impact:** Water accumulation incidence may occur due to inadequate availability of cross drainage structure or clogging of cross drainage structures.

150. **Mitigation Measures:** Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. Rejuvenation of the drainage system by removing encroachments/ congestions shall be regularly conducted.



## 6. Socioeconomic Impact

151. Assessment of project impact on socioeconomic conditions point to the conclusions that positive benefits are many fold compared to its adverse impact.

152. **Positive Impacts:** The better road access is likely to contribute the overall economic condition of village community. With the quick access to urban market areas, the farmers are likely to get better prices for their farm produce. Children will also be able to access the school and education facilities in the near by urban areas.

153. **Safety Measures** shall be adopted as per NRRDA guidelines. Some of them are highlighted below :

- Speed breakers (rumble strips) as per IRC: 99-1988 shall be provided at sharp curves design and bends where the curve design speed is less than 40 km per hour in plain in rolling terrain.
- Speed breakers shall also be provided at a threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m) through habitation.
- The speed breakers are provided and directional sight boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required.
- Hazard markers to be installed at each end of all box culverts, river crossing causeways and similar CD structures
- Shoulder side slopes shall not be steeper than 2h: 1v unless stone pitching of the slopes is provided.
- Cement concrete pavement and V-shaped drain is constructed to the full width of the available roadway within densely populated habitation.
- Directional sight board are installed on all sharp curves and bends
- At main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road.

## C. Road Specific Impacts

154. The assessment of sample roads indicates that environmental issue associated with all the roads are similar. Hence, mitigation measures applicable to all the road are also will be similar except variation in terms of magnitude which will depend on length of the road, the presence various environmental components. These components may be assessed in terms of no of pond, number of community structure (mostly temples, playground, school, gram Panchayat office) likely to be shifted, number and type of common utilities (hand pump, water tank, electric transformer, electrical poles).

## **V. ENVIRONMENTAL MANAGEMENT PLAN, INSTITUTIONAL ARRANGEMENTS AND GRIEVANCE ADDRESS MECHANISM**

### **A. Environmental Management Plan**

155. The Environmental Management Plan (EMP) is prepared to facilitate effective implementation of recommended mitigations measures with defined roles and responsibility for implementation and monitoring, regulatory compliance requirements, stages of implementation with location, timeframe and costs. The mitigation measures are proposed to eliminate or minimize the identified impact associated with design, construction and operation stages of the project, to acceptable level by adopting the most feasible options.

156. The EMP is prepared as per Environmental Management Standard (ECOP) applicable to rural road defined by ADB in the EARF for RCIP.

157. The identified impacts are mostly related to clearing operations of RoW, traffic diversions, setting and operation of construction camps, quarry and borrowing operations, transportation of materials, construction of cross drainage structures, air and noise pollution due to construction activities and operation of construction equipment, tree cutting and shifting of utilities and physical community structure.

158. Appropriate mitigation measures are identified for all rural road construction and operation activities. The identified impacts associated with rural roads and mitigative measures are largely common to most of the roads. The EMP is detailed at Appendix 5. It provides action common to all roads at pre construction, construction and operation stage. Since IEE is carried out prior to preparation of DPR, the EMP will be updated specific to road as per DPR requirements by PIU and included with DPR which shall be available to contractor at the time of bidding. The areas to be updated as per DPR provisions are highlighted under location column of EMP.

159. Since, these are rural road, the vehicular density and speed will be low. Movement of vehicles would be confined primarily for transfer of agricultural produce to market places. As such, no major emergency is anticipated. In any accidental eventuality, local administration can be reached quickly for help through Gram Panchayat (village administration) communication systems.

### **B. Environmental Monitoring Plan**

160. The environmental monitoring program aims to assess the the environmental performance of environmental management plan. The EMOP will:

- assess the effectiveness of mitigation measures,
- assess the change in environmental quality during construction and operation stages,
- assess compliance to regulatory requirements, and
- monitor the status of corrective action taken in case of deviation from the planned measures or regulatory requirements.

161. For rural roads, EMoP will rely more on visual observation during pre construction aspects<sup>14</sup>, construction stage and operation stage. A monitoring plan with monitoring indicator and frequency of monitoring is given in Appendix 6.

## **C. Institutional Arrangements and Responsibilities**

### **1. Institutional Arrangement**

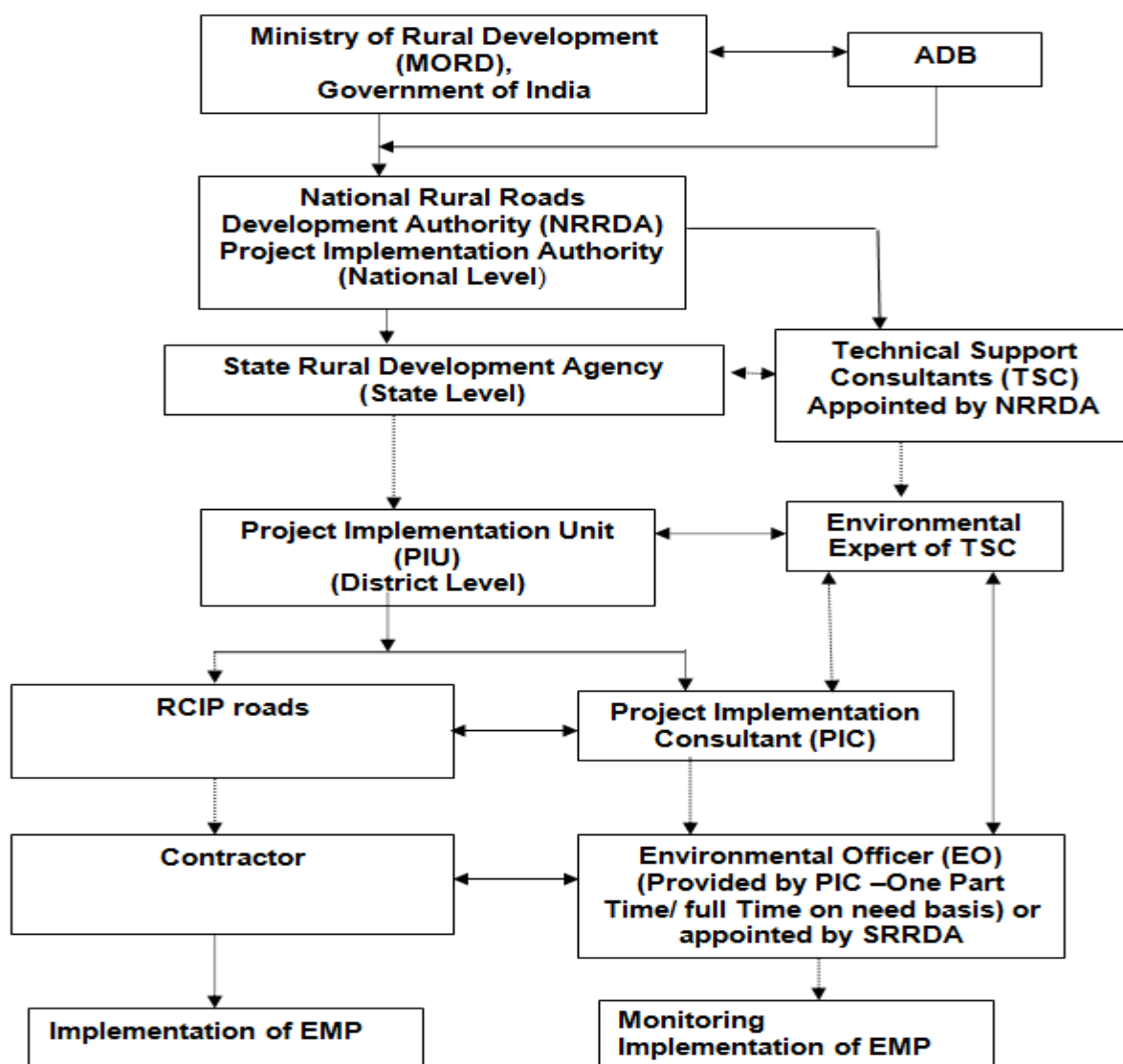
162. NRRDA constituted by MORD is the nodal agency for the implementation of PMGSY in India. SRRDA is the state level agency responsible for implementation of PMGSY program in the state. NRRDA has developed various guidelines and defined institutional arrangements for effective and timely implementation of PMGSY program, which also covers measures for environmental and social safeguards. In line with the defined institutional requirements, each SRRDA has set up district level project implementation units (PIUs). NRRDA also appoints Technical Support Consultant (TSC) to provide technical support for capacity building in SRRDA/PIUs, facilitating them for environmental and social safeguard compliance monitoring and due diligence. SRRDA appoints PIC (project implementation consultant) for supervision of construction work. PIC also helps PIU in monitoring the EMP.

163. NRRDA is also responsible to coordinate with SRRDA and ensure compliance to ADB safeguard requirements.

164. The institutional arrangement at National Level and state level for implementation of PMGSY including RCIP is shown at Figure 15.

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<sup>14</sup> Aspects related to alignment selection for inclusion of new roads



**Figure 15: Institutional Arrangement for EMP Implementation**

#### **D. Institutional Environmental Responsibilities**

165. The institutional environmental responsibilities for different level and function is elaborated below.

- MORD<sup>15</sup> the executing agency has the responsibility for monitoring implementation of the EMP for all subprojects and undertaking necessary due diligence. MORD ensure this through its Nodal Agency NRRDA (National Rural Road Development Agency). MORD will also ensure that:
- ADB is given access to undertake environmental due diligence for all subprojects, if and when needed as per EARF requirements
- SRRDA meet all environmental assessment requirements in accordance with EARF It undertakes random monitoring of the implementation of the EMP

<sup>15</sup> MoRD implements it through its nodal agency NRRDA which undertakes this with the help of Environmental Expert of Technical Support Consultant.

- Ensure compliance to legislative requirements such as forest clearance for diversion of forest land for non-forest purposes and Consent to Establish/Operate for hot mix plant, batching plant
- Appoint Technical Support Consultant (TSC) to assist SRRDA for various environmental aspect and safeguard compliances

166. SRRDA<sup>16</sup> will ensure that:

- ECOP checklist is prepared for each road;
- The completed ECOP checklist is included in the DPR with the help of PIC;
- Ensure that all required statutory environmental clearances are obtained and comply with clearance conditions;
- Ensure that the subproject specific EMPs and respective budget are included in the bidding documents;
- Ensure that the ECOP checklists and EMP (including general and site specific issues) are made available to the contractors;
- Undertake routine monitoring of the implementation of the EMP including spot checks on site and prepare monitoring reports at least once a year;
- With the support of technical support consultants prepare satisfactory environmental due diligence reports of the earlier tranche/periodic financing request before implementing the next tranche; and
- Appoint Project Implementation Consultant ( PIC) for construction supervision and assist PIUs for EMP implementation and related safeguard compliances.

167. PIU will be responsible to:

- Complete the ECOP checklists and prepare subproject specific EMPs (including monitoring plan) for each subproject;
- Obtain necessary statutory environmental clearance prior to commencement of civil works;
- Update the respective ECOP checklists and EMPs if there are any changes in alignment of the subprojects;
- To conduct monitoring of all subprojects and prepare pre-, during and postconstruction monitoring checklists through the project implementation consultants, and
- Prepare and submit to SRRDA annual monitoring report as per ADB defined format.

168. The Technical Support Consultants (TSC) appointed by NRRDA. The Environmental Expert of TSC:

- Will provide technical assistance to SRRDA/PIU regarding environmental aspects, environmental permitting/clearances requirement;
- Periodically review EMP implementation status including spot site inspections;
- Conduct workshops/capacity building program at different level and functions;
- Prepare environmental Due Diligence report for each tranche before implementing next tranche;

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<sup>16</sup> With assistance from PIU (Project Implementation Unit).

- Prepare state Level IEE reports and EMPs for non-sample roads based on the ECOP checklist completed by the PIC;

169. Project Implementation Consultant (PIC) is appointed by SRRDA. PIC will provide one Environmental Officer (EO). The EO will be responsible to ensure adherence and implementation of EMP at all stages of works by the contractor. The EO, if found warranting may also conduct field tests, independent of the contractor to determine the effectiveness of EMP under approval of PIC/PIU. The broad duties / responsibilities of the Environmental Officer will include:

- Review of project design and specifications to ensure their adequacy and suitability with respect to the implementation of EMP;
- Collection and dissemination of relevant environmental documents including amendments to environmental protection acts issued by the various agencies, namely, ADB, Government of India / State and local bodies;
- Interact with the counterpart of the Contractor(s), review work progress/plans and ensure implementation of the EMP;
- Coordination with the NGOs, community groups and Government departments on environmental issues, provide clarifications/ and obtain clearances during project implementation if any, as required from the regulatory authorities and/or submitting periodic compliance reports as required by the State Authorities;
- Monitoring sensitive environmental attributes during construction and operation stages<sup>12</sup> to ensure that the suggested mitigation measures in the EMP are implemented. This will also serve as the basis for the annual environmental monitoring reports;
- Facilitate PIU for preparation of annual monitoring report as per ADB defined format;
- Documentation of the environmental management/monitoring activities for the regular project implementation progress report; which will serve as the basis for the annual environmental monitoring reports; and
- Conducting environmental training/awareness programs for the contractors, the project implementation personnel and the communities.

170. Contractor is appointed by SRRDA for construction of road and ensure implementation of EMP proposed. The broad duties of constructor are as follows:

- Make adequate costs provision for EMP requirements while bidding
- Ensure effective implementation of mitigative measures as per road specific EMP
- Comply with all applicable legislative requirements and obtain necessary consents for to Establish/Operate before start of hot mix plant and batching plants. Comply with al permit conditions
- Create awareness amongst workers for environment, occupational health and safety aspects. Participate in training and awareness programme along with its executives conducted by PIC.
- Provide PPE and adequate resources for Environment Occupational Health and Safety
- Follow all the guidelines for borrowing earth and restoration of borrow areas, setting up construction camps
- Sourcing of quarry material from approved quarries only

- Provide all required input to PIC for environmental monitoring as per EMP.

## **E. Environmental Assessment and Review Framework (EARF) for RCIP**

171. ADB has prepared an Environmental Assessment and Review Framework (EARF) which identifies the broad scope of the MFF, outlines the policy, environmental screening and assessment, and institutional requirements for preparing the environmental assessments to be followed for subsequent batches and tranches. This EARF also specifies criteria for eligibility for selection rural roads under RCIP. The sample roads are selected following these criteria. The EMP, monitoring requirement, institutional aspects, capacity building, grievance redress mechanism presented in this chapter are developed in line with above EARF. The eligibility criteria for selection of roads under RCIP, environmental assessment requirement for each tranche and legal framework are given below:

### **1. Selection Criteria and Environmental Assessment Requirement**

172. The following criteria will be followed for selection of non-sample roads.

- No Category A (as per ADB's SPS) subproject will be included in the MFF.
- Subprojects will be eligible for construction or upgrading in accordance with the PMGSY guidelines, and be included in the respective district core network.
- The subprojects shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
- The subproject will not pass through any designated wildlife sanctuaries, national parks, other sanctuaries, notified ecological sensitive areas or area of international significance (e.g., protected wetland designated by the Wetland Convention).
- The projects shall only involve activities that follow Government of India laws and regulations, ADB's Safeguard Policy Statement (2009)

173. The following environmental assessment requirement will be followed roads included under RCIP:

- ECOP checklists with annexes on trees, utility structures, community structures, strip plans and photographs will be completed for each and every road.
- Based on the requirements of the PMGSY guidelines separate ECOP checklists will be prepared for bridges that are longer than 15 m.
- Based on the completed ECOP checklists for roads and bridges, IEE reports will be prepared at a state level. These reports must contain a general EMP and a site specific EMP where there are site specific issues.
- ADB's REA checklist for roads and highways will be completed based on the state level IEE reports prepared and submitted to ADB to confirm categorization.

174. The vulnerable to climate change will also be screened following screening checklists, which was integrated in the ADB REA Checklists and corresponding mitigation measures will be prepared.

- Is the project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes?

- Could changes in precipitation patterns or evaporation rates over the lifespan of the project affect its sustainability and cost (i.e., increased landslides increase maintenance costs)?
- Does the project use or depend on resources which could be affected by climate changes such as changes in temperature, precipitation, wind (increased soil moisture content in the sub-grade)?
- Are there any demographic or socioeconomic aspects of the subproject and project area (e.g., population growth, settlement patterns) that increase the vulnerability of the project and surrounding area?
- Could the subproject potentially increase the vulnerability of the surrounding area (i.e., by increasing runoff, encouraging settlement in earthquake zones)?

## **2. Legal Framework**

175. As per Indian legislation, an environmental clearance is not required for rural roads. However, it may attract provisions of Forest Conservation Act, Wildlife (Protection) Act, and other legislation related with Air, Water and Noise pollution controls and prevention. The legislative applicability screening is presented in chapter I of this report and it will apply for nonsample road as well. Additionally, to ensure conformance to SPS 2009, the subprojects will be subject to the following requirements:

- Submission of a completed Rapid Environment Assessment (REA) checklist for Roads and Highways and a categorization form for each state level IEE that is prepared.
- An Initial Environmental Examination<sup>13</sup> (IEE) report including the preparation of an Environmental Management Plan (EMP) and a Monitoring Plan.
- Regular monitoring of implementation of the EMP and submission of monitoring reports and due diligence reports to ADB as necessary.

## **F. Capacity Building**

176. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. Capacity building activities will mainly comprise training workshops for SRRDA and PIU environmental officers on (i) completion of environmental code of practice (ECOP) checklists; (ii) preparation of environmental management plan (EMP) and monitoring plans; (iii) monitoring of EMP implementation and completion of pre-, during and post-construction monitoring checklists; and (iv) preparation of monitoring reports. These few workshops have already been conducted at participating states though ADB officials and TSC experts. Additional training will be carried out periodically, by in-house trained and experienced officials.

## **G. Consultation and Information Disclosure**

177. During the preparation of ECOP and Detailed Project Report (DPR), the PIU has to ensure consultation, and addressal of concerns of the affected people.

178. All environmental assessment documents are subject to ADB's Public Communication Policy (2011) and will be made available to the public, upon request. The SRRDAs are responsible for ensuring that all environmental checklist documentation, including the environmental due diligence and monitoring reports, are properly and systematically kept as



part of the Investment Program specific records. MORD must disclose state specific sample road IEE reports on its website.

#### **H. Grievance Redress Mechanism**

179. PRI administered village level committee is the first contact point for any aggrieved person. This committee will try to settle the concern by them self or in consultation with contractor or PIU. The unresolved concerned are forwarded to PIU for further action. PIU resolves these concerns in consultation with PIC, SRRDA, and contractor as the situation demands. This is an established practice and is seen effective enough in RRS II. PIC will also collect concerns received by this committee in the intervening period and report the effectiveness of action taken.

180. Experience in earlier tranches of the program shows that village level grievance redress committees comprising the sarpanch, panchayat secretary and other prominent citizens of the village were in place. However, as the site selection and project design process involved participation and full consultation with the community, there was hardly any grievance by the APs and no complaint was received by any of the village committees.

181. At national level NRRDA has made provision of registering complain /suggestion through its website. NRRDA forwards these complains to concerned SRRDA for necessary actions. SRRDA directly or through concerned PIU initiate the appropriate action and update the complainant as well as NRRDA. It is proposed that NRRDA website will be cross-linked to each SRRDA website as well or SRRDA will also make provision of complain registry at its website.

## VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

### A. General

182. Public consultation was undertaken consistent with the ADB requirements. All the five principles of information dissemination, information solicitation, integration, coordination and engagement into dialogue were incorporated in the consultation process. A framework of different environmental impacts likely from the project was strengthened and modified based on opinions of all those consulted, especially in the micro level by setting up dialogues with the village people from whom information on site facts and prevailing conditions were collected.

183. Stakeholders' consultations were held with the intent to understand their concerns, apprehensions, overall opinion and solicit recommendations to improve project design. Informal meetings, interviews were organized covering the entire project stretch. The informal consultation generally started with explaining the subprojects, followed by an explanation to potential impacts. Participant's views were gathered with regard to loss of agricultural land, shifting of utilities, shifting of common cultural properties, effect on air and noise quality of the area due to traffic, water availability, accident and risk.

184. The discussions were designed to receive maximum inputs from the participants regarding their acceptability and environmental concerns arising out of the subproject. They were given the brief outline of the project to which their opinion was sought. Suggestions were also sought for mitigating any potential adverse impact.

### B. Compliance with Relevant Regulatory Requirements

185. In India, public consultation is mandatory in case of Category A and B1 category Projects<sup>17</sup> in select conditions. Being a category B project as per ADB Environmental Guidelines 2003, consultation was carried out during the early stage of IEE report preparation. The requirement of public consultation during the implementation of the project has been proposed as part of the mitigation plan. This will involve regular communications between the PIU, PIC and the grievance redressal committee's and community leaders. Consultations carried out and grievances addressed will be recorded in the annual environmental monitoring report which will be submitted for disclosure on the ADB website.

### C. Beneficiaries' Comments

186. The project has immense acceptability among the local people. They perceived that in addition to providing all weather connectivity, the subproject road would bring positive socioeconomic changes in the area. Local people mainly discussed on issues related to drainage and commencement of the construction work.

187. Some of the general issues raised during the different consultation sessions are summarized below :

- **Construction Camp** - The participants did not apprehend any adverse impact due to the construction camp near to their villages. They responded positively

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<sup>17</sup> As per schedule I of EIA notification number S.O. 1533, dated 14<sup>th</sup> September 2006. This notification also defines when a public consultation is mandatory. However, the project roads does not require environmental clearance under this notification.

towards providing support to these, if required, in terms of any food, water requirements.

- **Water Logging and Drainage** - Participants informed about few low-lying areas where water logging takes place during monsoon season. The villagers requested for provision of adequate cross drainage structures at these locations.
- **Loss of Livelihood and Income Restoration Options** - those who had encroached on the proposed alignment raised this issue. However, they offered the encroached space for the proposed project, if demanded.
- **Road Safety** - Safety issues did not raised concern among the inhabitants including women.
- **Land Acquisition** - People were in full support of the project and were ready to donate their land for the same, if required.
- **Losses of Idols/Shrines** - Participants supported the project and were willing to shift the idols, burial grounds and other religious structures observed at certain locations if required.
- **Loss of Trees Due to Road Construction** - Respondents were of the opinion that trees cutting should be avoided or else minimized. For trees to be cut compensatory plantation should be done. Some villagers expected additional plantation should be carried out. They recommended to plant only local tree species.
- **Impacts on Health** – Villagers do not perceived any impact due to this road project. However, issues pertaining to sexually transmitted diseases (STDs), HIV- AIDS may be an issue during construction stage however, this aspects are analysed by Social Impact Assessment team separately.
- **Ambient Air & Noise Quality** – The respondents viewed that these are the problems of urban areas and their villages are still untouched from this aspect. They even do not anticipate any of these problems after the completion of the project. However, they do not want increased in pollution during construction phase.
- **Inconvenience during Construction** - The participants viewed that they will manage it, as it will be temporary in nature.
- **Employment during Construction** - The locals expected that they should be given preference in employment during project implementation.
- **Perceptions and Expectations** - The public and the PAPs appreciated need and supported the project fully. Community at large appreciated overall benefits to them resulting from project development;

#### D. Addressal of Issues

188. The efforts made to address all the issues raised during consultations through design changes/adjustments and environmental best practices. Some of the provisions made under the project to address the issues and concerns of the community are given in Table 12.

**Table 12 : Addressal of Issues and Concerns under the Project**

<b>Issue/Concern</b>	<b>Addressal under the project</b>
Water Logging and Drainage	Adequate cross drainage structures have been planned
Road Safety	Adequate safety signage is planned all along the rural road.
Land acquisition and Mode of compensation	The proposed RoW is 12m along the rural road. No land acquisition is planned in project road.
Loss of roadside idols/shrines	Idols and shrines will be relocated to the other nearby

Issue/Concern	Addressal under the project
	places with consultation and proper rituals
Loss of trees	Compensatory Afforestation would be done at the ratio of three trees for each tree to be cut. Additional tree plantation shall be made wherever feasible
Increased pollution levels	Ambient air quality, water quality largely meets the prescribed standard. All efforts shall be made to prevent pollution. No construction activity shall be taken at night in village area.
Utilities and basic infrastructure	All the effected utilities, electric poles, telephone lines, wells, tube wells etc. shall be relocated under the project cost. Primary water sources like hand pump and open well should be relocated first if affected.
Employment of locals during construction	Locals will be given preference for employment during the project implementation

## VII. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

189. The findings of Environment Assessment of sample roads indicate that impacts are mostly similar and subprojects are unlikely to cause any significant environmental impacts. While some of the impacts are negative, there are many bearing benefits to the area. Most of the impacts are likely to occur during construction stage, are temporary in nature, and can be mitigated with minor to negligible residual impacts.

190. The project received immense support from local people as they perceive that this project will improve the overall connectivity and bring various economic opportunities to the people of the area

191. All sample roads included under RCIP were selected based on ecological and climate change consideration defined under EARF. Accordingly, none of the sample roads passes through protected areas or encroaches precious ecology (sensitive or protected areas) or any historical or archeologically protected areas. A total of 233 selected sample road passes through reserved forests but are all existing path. Few trees cutting though may be involved.

192. Few rural road crosses natural stream and water logging problem in few roads exist. Adequate engineering measures are proposed slop stabilisation, erosion control and drainage of water.

193. All the sample roads are aligned with existing village roads and unpaved movement paths. As such, land acquisition is nil or very minimal which is also acquired through donations from villagers.

194. Considering insignificant environmental sensitivity, the project is categorized as category B as per ADB Safeguard Policy Statement 2009.

195. No categorization is made under environmental legislation of India, since these small roads do not require any environmental clearance in accordance to Indian Environmental (Protection) Act and Rules, 1986 amended till date. However, clearance from Forest Department will be required for cutting of trees/working in forest land.

196. The impacts identified are mostly related to alignment selection, land clearing, borrowing earth, cutting of trees, shifting of utilities and community structures, establishment of construction camp or material storage areas, transportation of material and operation of hot mix plant. All identified impacts are either eliminated or minimized through design consideration and suitable mitigative measures.

197. Environmental Management plan covering all stages of road construction (design, construction and operation) is prepared with defined responsibility for its implementation. Environmental Monitoring plan is also prepared to ensure effective implementation of EMPs.

198. NRRDA/SRRDA has defined institutional setup including with specified responsibility for environmental management. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. The capacity enhancement is proposed through focused workshops and training session. Few workshops have already been conducted at participating

states through ADB officials and TSC experts. Trained and experienced in-house officials should carry out more training in future periodically.

199. The IEE also indicate that rural road construction works does not warrant further EIA study for subsequent rural road construction works in Odisha.

## **B. Key Recommendations**

200. Any major changes or any major additional work other than the proposed project activities, will require preparation of another environmental assessment. This additional assessment will have to be submitted to NRRDA, Concerned Government authorities and ADB for concurrence before civil works commence.

201. The implementation of prescribed mitigation measures will minimize/avoid the adverse impacts. Moreover, the impacts shall be monitored continually by implementing and updating the Environmental Management plan and Environmental Monitoring Plan.

202. These IEE is prepared based on ECOPs and feasibility stage. Subproject specific EMP shall be improved as per the final provisions made under DPRs. The updated EMP if there is any change, shall also be sent to ADB for information.

203. Executing agency shall ensure that EMP and EMoP is included in Bill of Quantity (BOQ) and forms part of bid document and civil works contract. The contractor will specify the quantity and budget for various activities like rehabilitation of borrow earth pits, first aid and sanitation facilities at construction camp and temporary office/material storage place. The same shall be revised if necessary during project implementation or if there is any change in the project design. Any such change shall be reported to ADB as well.

**Appendix 1: Details of Roads Proposed under Tranche-3**

<b>SI No</b>	<b>Division</b>	<b>Block</b>	<b>Road Name</b>	<b>Length (Km)</b>
1	Balasore I	Nilgiri	Kansa- Kakudipal	2.50
2	Balasore I	Nilgiri	Telipal- Siarimal	1.50
3	Balasore I	Nilgiri	PWD - Khuntapaladiha	1.70
4	Balasore I	Nilgiri	PWD- Bholanal	3.03
5	Balasore I	Nilgiri	PWD- Sarupal	1.50
6	Balasore I	Oupada	PWD Road to Pinchhabania	4.30
7	Balasore I	Oupada	Dimichua - Harichandrapur	2.00
8	Balasore I	Remuna	Kuligaon - Gambharia	2.00
9	Balasore I	Remuna	Bhadrasahi- Gaudgaon	3.40
10	Balasore I	Basta	Kothia - Kuchuli	1.50
11	Balasore I	Balasore	NH 60 - Paramanandapur	3.00
12	Balasore I	Balasore	PWD Road- Kuradiha	2.00
13	Balasore I	Balasore	Salt Road- Dalsusa	2.00
14	Balasore I	Balasore	NH60 - Belbaria	3.00
<b>14</b>	<b>Sub Total</b>			<b>33.43</b>
1	Balasore II	Bahanaga	R.D. road to Kaharagohiri	5.60
2	Balasore II	Simulia	Dadhibamanpur to Parameswarapur	3.50
3	Balasore II	Simulia	Astia to Biranchipur	5.40
4	Balasore II	Khaira	Chakradharpur (RD road) to Krushnadaspur	3.50
5	Balasore II	Khaira	Soro Kupari PWD Road to Arjunpur	0.70
6	Balasore II	Khaira	Tudigadia to Rafayatpur	5.50
7	Balasore II	Simulia	Bari to Tirukha	3.70
<b>7</b>	<b>Sub Total</b>			<b>27.90</b>
1	Bhadrak I	Tihidi	Barsar to Madhupur	5.00
<b>1</b>	<b>Sub Total</b>			<b>5.00</b>
1	Bhadrak II	Bhadrak	Asura to Trisalpur	4.50
2	Bhadrak II	Bhadrak	PWD Road to D S Bindha	3.00
3	Bhadrak II	B.POKHARI	Barahanuapada	3.00
4	Bhadrak II	B.POKHARI	T2 to Mudhapada	3.00
5	Bhadrak II	Dhamangar	PWD Road to Dinajpur	3.70
6	Bhadrak II	Dhamangar	PWD Road to Tarabantia	2.70
7	Bhadrak II	B.POKHARI	(A) T2 to Nawarangapur	2.50
8	Bhadrak II	B.POKHARI	(B) T2 to Surubana	3.20
9	Bhadrak II	B.POKHARI	T1 to Sarapada	4.90
10	Bhadrak II	B.POKHARI	T3 to Bankamuhana	4.80
11	Bhadrak II	Chandabali	T3 to Pithiasenda	5.50
12	Bhadrak II	Basudavpur	PWD Road to Mishrapur	4.00
13	Bhadrak II	Basudavpur	(A) L42 to Kuali	5.50
14	Bhadrak II	Basudavpur	(B) T2 to Purusotampur	1.50
15	Bhadrak II	Basudavpur	PWD Road to Samia	1.50
16	Bhadrak II	Basudavpur	Eram Road to Olagada	6.50
17	Bhadrak II	Chandabali	Chardiha to Rajendrapalli	3.20
18	Bhadrak II	Chandabali	T6 to Kandisahi	2.20
19	Bhadrak II	B.Pokhari	T-1 to Uttarbad	4.00
20	Bhadrak II	Chandabali	Dosinga to Oramal	4.00
21	Bhadrak II	Basudavpur	PWD Road to Jignipur	4.00
22	Bhadrak II	Basudavpur	PWD Road to Bhoisahi	4.70
<b>22</b>	<b>Sub Total</b>			<b>81.90</b>
1	Bolangir	Aglapur	RD road to Amarmunda (Road-A)	2.00
2	Bolangir	Aglapur	RD road to Pudapadar (Road-B)	3.33

SI No	Division	Block	Road Name	Length (Km)
3	Bolangir	Aglapur	N.H.-201 to Danipali (Road-C)	2.00
4	Bolangir	Aglapur	RD road to Pandkital (Road-D)	1.41
5	Bolangir	Belpada	RD Road to Daramunda (Road-A)	3.25
6	Bolangir	Belpada	RD Road to Sunabahal (Road-B)	2.13
7	Bolangir	Bolangir	RD Road to Ramsingha (Road-A)	1.25
8	Bolangir	Bolangir	Baxiundar to Dhobaudar (Road-B)	2.50
9	Bolangir	Bolangir	Mayabarah to Uchhabahal (Road-C)	3.25
10	Bolangir	Bolangir	SH-42 to Bedtenlenpali (Road-A)	3.33
11	Bolangir	Bolangir	SH-42 to Khagsabahali (Road-B)	3.50
12	Bolangir	Bolangir	Bhudimuhan to Santenpali (Road-c)	2.30
13	Bolangir	Deogaon	PWD Road to Jamjharan	4.50
14	Bolangir	Gudvella	Dungibahal to Mandapala	5.20
15	Bolangir	Gudvella	P.S Road to Sindurbahali	1.30
16	Bolangir	Khaprakhol	Nandupala to Tumbipadar	2.30
17	Bolangir	Khaprakhol	Bhaludunguri to Karlakutna(Road-B)	4.20
18	Bolangir	Khaprakhol	Kariamal to Dudukipadar(Road-A)	2.30
19	Bolangir	Khaprakhol	RD Road to Ambapali(Road-B)	3.60
20	Bolangir	Khaprakhol	RD Road to Brahmani(Road-A)	2.40
21	Bolangir	Loisingha	NH-201 to Banjhipali (Road-A)	1.50
22	Bolangir	Loisingha	NH-201 to Karliput (Road-B)	2.00
23	Bolangir	Loisingha	RD road to Unchhabahali (Road-C)	3.00
24	Bolangir	Patnagarh	PWD Road to Kanheital	4.60
25	Bolangir	Patnagarh	PS Road to Kerbeda (Road-A)	1.45
26	Bolangir	Patnagarh	RD Road to Mandamahar (Road-B)	1.65
27	Bolangir	Patnagarh	RD Road to Bijamugar (Road-C)	1.00
28	Bolangir	Patnagarh	PS Road to Babejore (Road-D)	2.55
29	Bolangir	Puintal	NH-201 to Padiabahar (Road-A)	3.00
30	Bolangir	Puintal	RD Road to Khamarmunda (Road-B)	1.00
31	Bolangir	Puintal	Jamgaon RD to Kasurpali (Road-C)	1.50
32	Bolangir	Saintala	RD Road to Biratkani	1.00
33	Bolangir	Saintala	RD Road to Bhatasar	1.10
34	Bolangir	Saintala	TD RD Road to Jurabandha	0.78
35	Bolangir	Agalpur	RD Road to Gandpali	3.00
36	Bolangir	Khaprakhol	PWD Road to Bendra	8.30
37	Bolangir	Saintala	Tikrapada RD Road to Dukelcharchar	2.60
38	Bolangir	Puintala	SH-14 to Bhalbuka	2.75
39	Bolangir	Patnagarh	Khuntsamalei to Daitarymunda	2.20
<b>39</b>	<b>Sub Total</b>			<b>101.03</b>
1	Titlagarh	Muribahal	Sargul to Bayaudar	1.60
2	Titlagarh	Muribahal	Chanabahar chhak to Ledapadar	2.70
3	Titlagarh	Muribahal	Tentulikhunti to Karlapitha	3.10
4	Titlagarh	Muribahal	Jamkani to Limpara	1.20
5	Titlagarh	Muribahal	Asurmunda Chhak to Dudukapada	2.00
6	Titlagarh	Muribahal	Bijighat to Makhapali via: Sahajpani	1.80
7	Titlagarh	Muribahal	RD Road to Bijighat	4.30
8	Titlagarh	Muribahal	Dumerpada to Barajuri	3.00
9	Titlagarh	Muribahal	Singhpali to Siletpara	2.10
10	Titlagarh	Bangomunda	RD Road to Balkhamar	2.70
11	Titlagarh	Bangomunda	Themera to Utkela	2.05
12	Titlagarh	Bangomunda	PWD Road to Sahajot	4.60
13	Titlagarh	Bangomunda	RD Road to Bahalpadar	4.40



SI No	Division	Block	Road Name	Length (Km)
14	Titlagarh	Bangomunda	Barlabahali to Baldha	1.60
15	Titlagarh	Bangomunda	RD Road to Chandaguda	1.50
16	Titlagarh	Bangomunda	Khujenbahal to Dangia	2.40
17	Titlagarh	Bangomunda	Dangia to Bagbahal	2.40
18	Titlagarh	Bangomunda	Khira to Deogaon	5.00
19	Titlagarh	Bangomunda	Pipalmunda to Telipadar	1.80
20	Titlagarh	Bangomunda	SH-16 to Gharla	1.85
21	Titlagarh	Titilagarh	MDR-40 to Thalka	2.22
22	Titlagarh	Titilagarh	NH-217 to Belpada	1.80
23	Titlagarh	Titilagarh	Titilagarh-Ghadar to Chitalal	2.20
24	Titlagarh	Titilagarh	Sireikela-Goudtola RD Road to Goidabari	0.60
25	Titlagarh	Titilagarh	SH-16 to Shukhunabhata	1.10
26	Titlagarh	Titilagarh	SH-16 to Kandera	1.00
27	Titlagarh	Titilagarh	MDR to Badpatprapali	4.20
28	Titlagarh	Titilagarh	L-89 to Beherapada	0.90
29	Titlagarh	Tureikela	Ramod to Mahanilaha	3.50
30	Titlagarh	Tureikela	Salepada to Patimal	3.00
31	Titlagarh	Tureikela	Mandla to Kameimunda	2.30
32	Titlagarh	Tureikela	Dabri to Kandupada	1.80
33	Titlagarh	Tureikela	PWD Road to Bagbahal	2.30
34	Titlagarh	Tureikela	Nandol to Bharuakani	5.50
35	Titlagarh	Tureikela	PWD Road to Halanbhata	7.40
36	Titlagarh	Tureikela	Badadakla to Nagaphena	2.20
37	Titlagarh	Tureikela	Dholmandal to Gabahara	2.80
38	Titlagarh	Muribahal	Janipara to Nuapada	2.00
39	Titlagarh	Muribahal	Dejuri to Padhanmundi	4.50
40	Titlagarh	Tureikela	RD Road to Simanbahal	1.30
41	Titlagarh	Tureikela	Khujen to Bandhanpali	2.00
<b>41</b>	<b>Sub Total</b>			<b>106.72</b>
1	Cuttack I	Cuttack Sadar	Paikasahi(Nurpatna) to Chanchapada	5.00
2	Cuttack I	Cuttack Sadar	Paikasahi(Nurpatna) to Chanchapada	5.73
3	Cuttack I	Mahanga	Balipada to Dihigop(0/0 Km to 0/4000Km)	4.00
4	Cuttack I	Mahanga	Balipada to Dihigop(4/000 Km to 9/900Km)	5.90
5	Cuttack I	Mahanga	Balipada to Dihigop(9/900 Km to 15/200Km)	5.30
6	Cuttack I	Cuttack Sadar	Bhoipada to Sadhusahi	6.94
7	Cuttack I	Cuttack Sadar	Bhoipada to Sadhusahi	4.08
8	Cuttack I	Nischintakoili	Kulia to San Routpati	4.87
9	Cuttack I	Nischintakoili	Kulia to San Routpati	3.22
10	Cuttack I	Nischintakoili	Kulia to San Routpati	6.32
<b>10</b>	<b>Sub Total</b>			<b>51.34</b>
1	Cuttack II	Narsinghpur	Nuagarh to Bhuska	3.80
2	Cuttack II	Baramba	Badakambilo to Chhanchunia	9.00
<b>2</b>	<b>Sub Total</b>			<b>12.80</b>
1	Deogarh	Reamal	Gadiapal to Thianal	4.05
2	Deogarh	Reamal	NH 200 to Panchamahala	2.20
3	Deogarh	Reamal	N.H.200 Rangamatia ( Kadalipal)	9.93
4	Deogarh	Reamal	Mahasindhu to Chhachupali	6.09
5	Deogarh	Tileibani	Jharagogua to Raital	4.50
6	Deogarh	Tileibani	Parposi to Tasarada	5.00
7	Deogarh	Tileibani	Jamunali to Manjaribahal	2.20
8	Deogarh	Barkote	Jharabahal to Netrabahal	2.70

SI No	Division	Block	Road Name	Length (Km)
9	Deogarh	Barkote	Saida to Rugudakudar	5.45
10	Deogarh	Barkote	Rugudakudar to Pacheripani	5.10
11	Deogarh	Tileibani	Bhaluguha to Surupa	3.10
<b>11</b>	<b>Sub Total</b>			<b>50.32</b>
1	Ganjam I	Beguniapada	Janibili to PWD road	9.10
2	Ganjam I	Beguniapada	Kalimeghi to Luhakote	6.00
3	Ganjam I	Sorada	Nuagam to Binjigiri	4.10
4	Ganjam I	Sorada	Sunakhandi to Sandhipiplapanka	2.50
5	Ganjam I	Bellaguntha	PWD Road to Raipada	1.98
6	Ganjam I	Bellaguntha	SH-7 to Ambadeuli	1.48
7	Ganjam I	Bellaguntha	RD Road to Saranuapalli	7.00
8	Ganjam I	Bhanjanagar	PWD Road to Boribandha	2.00
9	Ganjam I	Sorada	RD Road (Mayangi) to Dhepapalli	13.20
10	Ganjam I	Jagannathprasad	Balakiari to Gundribadi	2.50
11	Ganjam I	Jagannathprasad	SH-21 to Tikarapalli	1.20
12	Ganjam I	Jagannathprasad	Haridapadar to Chudakhai	3.80
13	Ganjam I	Sorada	Goudagotha to Kurubandha	7.20
14	Ganjam I	Sorada	B.Kotibadi to Petaguda	3.50
15	Ganjam I	Sorada	Perju to Muliapalli	1.50
16	Ganjam I	Sorada	Perju to Hatiguda	1.50
17	Ganjam I	Bhanjanagar	Dhumakumpa to Akhupadar	3.80
18	Ganjam I	Bhanjanagar	Daha to Gudiapadar	3.00
19	Ganjam I	Sorada	PWD Road to Ragada	10.20
20	Ganjam I	Bhanjanagar	PWD Road to Kanabindha	8.50
21	Ganjam I	Sorada	Sarapanka to Kalama	1.30
22	Ganjam I	Sorada	Dulada (022) to Gochapalli	2.00
23	Ganjam I	Bhanjanagar	RD Road to Rambhapalli	6.00
24	Ganjam I	Bhanjanagar	Kathachira to Kumbhipalli	5.00
25	Ganjam I	Bhanjanagar	Durgaprasad Chhak to Ulungia	12.96
26	Ganjam I	Dharakote	Manikyapur to Maradi	3.80
27	Ganjam I	Dharakote	MDR - 64 to JN Pur	2.60
28	Ganjam I	Aska	Pathara to Gabanala Sarapanka road to Kalama	8.50
29	Ganjam I	Dharakote	MDR - 64 to Lalitpur	1.80
30	Ganjam I	Dharakote	Kangidi to Adibandha	1.80
31	Ganjam I	Dharakote	RD Road to Gopalpur	3.50
32	Ganjam I	Polosara	Banthapalli to Muktamaladeipur road	3.10
33	Ganjam I	Buguda	Pokasunga Jn. to Bellaguma Badakhola	1.85
34	Ganjam I	Buguda	Samalai to Dhimirisahi road	1.88
35	Ganjam I	Polosara	R.D road to Bhitrakhola	2.25
36	Ganjam I	Buguda	Khadalapalli to Pokasunga	4.00
37	Ganjam I	Polosara	Mathura road to Dhaumala (Hatipadapalli)	4.20
38	Ganjam I	Dharakote	RD Road to Sarapada	6.70
39	Ganjam I	Buguda	Hadichira to Badatanda	6.50
<b>39</b>	<b>Sub Total</b>			<b>173.80</b>
1	Ganjam II	Chatrapur	Chikalakhadi to Jharapokhari	3.50
2	Ganjam II	Digapahandi	PWD road to Gunthapada	4.80
3	Ganjam II	Digapahandi	PWD road to Kukutabandha to Narayanpur	2.30
4	Ganjam II	Digapahandi	PWD road to Ramachandapur	4.30
5	Ganjam II	Digapahandi	PS road to Sindhaba to Syamasundarpalli	2.80
6	Ganjam II	Digapahandi	RD road to Nimakhandipentha to Baiganabadi	8.20

SI No	Division	Block	Road Name	Length (Km)
7	Ganjam II	K.S.Nagar	PWD road to Ratnapur	2.50
8	Ganjam II	K.S.Nagar	Duhanapalli to Mohanapalli road	2.00
9	Ganjam II	Khallikote	Badapalli to Badabola	2.20
10	Ganjam II	Khallikote	Badapalli to Chakasingi	2.80
11	Ganjam II	Khallikote	RD road to Haripur	6.60
12	Ganjam II	Khallikote	Biripur to Raipada	3.20
13	Ganjam II	Kukudakhandi	PWD road to Ramadhia	11.10
14	Ganjam II	Patrapur	RD road to Parvatipur	4.00
15	Ganjam II	Patrapur	PWD road to Daleswar	2.00
16	Ganjam II	Patrapur	PWD road to Budagada	2.51
17	Ganjam II	Patrapur	PWD road to Patrapur to Mukundapur	5.50
18	Ganjam II	Sanakhemundi	PWD road to Nunilathi to Khairapadar	3.95
19	Ganjam II	Sanakhemundi	SH-17 to Podamari to Buguda	12.16
20	Ganjam II	Sheragada	SH-29 to Nuapalli	1.50
21	Ganjam II	Sheragada	SH-36 to L.N.Pur	2.00
22	Ganjam II	Sheragada	SH-36 to P Karadakana	1.50
23	Ganjam II	Patrapur	RD road to Buratal	7.50
24	Ganjam II	Patrapur	PWD road to Ankuli (GP) Reach-I from 0/0 to 11/60	11.60
25	Ganjam II	Patrapur	PWD road to Ankuli (GP) Reach-II from 11/60 to 32/900	21.30
26	Ganjam II	Rangeilunda	NH-5 to Mishrapalli	1.60
27	Ganjam II	Digapahandi	RD road to Narendraballi	0.70
<b>27</b>	<b>Sub Total</b>			<b>134.11</b>
1	Jagatsinghpur	Balikuda	Nuagaon to Samantarapur	2.50
2	Jagatsinghpur	Tirtol	Badjanga to Rankei	2.70
3	Jagatsinghpur	Biridi	Basandra to Bambilo	4.70
4	Jagatsinghpur	Tirtol	K.N.Pur to Itatikiri	3.35
5	Jagatsinghpur	Erasama	Kujanga Noliasahi RD Road - Janardhanpur	1.30
6	Jagatsinghpur	Balikuda	Santho to Alikanta	2.30
7	Jagatsinghpur	Naugaon	Arakhakud to Harispur	5.00
8	Jagatsinghpur	Erasama	Erasama Chatua RD Road (Deika) to Dhobei	3.00
9	Jagatsinghpur	Tirtol	PWD Road 2nd km to Hazipur	2.50
10	Jagatsinghpur	Tirtol	Nuapokhari to Dhunpur	10.10
11	Jagatsinghpur	Balikuda	Kulanpur to Daraba	2.50
12	Jagatsinghpur	Tirtol	Nuapokhari to Dianpur	1.70
13	Jagatsinghpur	Balikuda	Rahana to Prasanpur	2.70
14	Jagatsinghpur	Balikuda	Jaganathpur to Khaleri	2.50
15	Jagatsinghpur	Tirtol	Bisanpur to Nirapoi	2.25
16	Jagatsinghpur	Balikuda	Naharana to Sunadhar	6.70
17	Jagatsinghpur	Erasama	Khatikolda to Ganeswarapur	4.00
<b>17</b>	<b>Sub Total</b>			<b>59.80</b>
1	Jajpur I	Dasarathpur	Kayan to Ichhapur	6.32
2	Jajpur I	Korei	N.H.- 5A to Badatrilochanpur	0.75
3	Jajpur I	Korei	R.D. Road to Nuagada	3.00
4	Jajpur I	Binjharpur	RD Road to Andhalo	7.50
5	Jajpur I	Dasarathpur	P.W.D. Road to Sidheswarapur	5.00
6	Jajpur I	Sukinda	RD Road to Arjunajhar	5.00
7	Jajpur I	Korei	Rampur Sagadi to Bengamadhapur	1.35
8	Jajpur I	Dasarathpur	PWD Road to Sanadogada	6.00
9	Jajpur I	Dasarathpur	R.D. Road to Jundupur	7.55

SI No	Division	Block	Road Name	Length (Km)
10	Jajpur I	Danagadi	Expressway to Jandapal	1.95
<b>10</b>	<b>Sub Total</b>			<b>44.42</b>
1	Jajpur II	Dharmasala	R & B road to Krushnaposi	2.35
2	Jajpur II	Dharmasala	RD road Madhusudanpur to Tarasha	3.00
3	Jajpur II	Dharmasala	Bajabati to Khunta	2.95
4	Jajpur II	Dharmasala	R & B road to Majhipatna	2.85
<b>4</b>	<b>Sub Total</b>			<b>11.15</b>
1	Dharmagarh	Dharmagarh	P.W.D. Road to Budhimunda	3.30
2	Dharmagarh	Dharmagarh	Palaspani to Beheraguda (Road - A)	3.00
3	Dharmagarh	Dharmagarh	P.S. Road to Hatipakhan (Road - B)	3.36
4	Dharmagarh	Dharmagarh	R.D. ROAD TO Bankimunda (Road - A)	3.21
5	Dharmagarh	Dharmagarh	R.D. Road to Palsapada (Road - B)	2.10
6	Dharmagarh	Dharmagarh	R.D. Road to Ravanguda (Road - A)	1.83
7	Dharmagarh	Koksara	Khuntia to Pipalpada (Road - B)	2.60
8	Dharmagarh	Kalampur	P.W.D. Road to Goud Kenduguda	2.50
9	Dharmagarh	Kalampur	Bijmara to Dumermunda	2.50
10	Dharmagarh	Kalampur	Karmel to Dongriguda (Road - A)	1.29
11	Dharmagarh	Kalampur	Bodelbandha to Tutraguda (Road - B)	2.10
12	Dharmagarh	Jaipatna	R.D. Road to Gopalpur (Road - A)	5.04
13	Dharmagarh	Jaipatna	P.S. Road to Ghumapada (Road - B)	3.03
14	Dharmagarh	Jaipatna	R.D. Road to Bastiguda	4.65
15	Dharmagarh	Jaipatna	R.D. Road to Sagjhore	5.01
16	Dharmagarh	Koksara	Dahagaon To Jharabandha (Road - A)	3.60
17	Dharmagarh	Koksara	Dahagaon To Gitikapadar (Road - B)	1.30
18	Dharmagarh	Koksara	Siuni Nh-201 To Tikrapada	2.91
19	Dharmagarh	Koksara	Gotamunda R.D. Road To Kanakpur	4.50
20	Dharmagarh	Koksara	T05 To Jampada	2.04
21	Dharmagarh	Koksara	Pipaljhpar To Gotamunda (Road - A)	2.25
22	Dharmagarh	Koksara	Bhursaguda To Malpada (Road - B)	2.00
23	Dharmagarh	Koksara	Soniapada To Ladugaon	6.03
24	Dharmagarh	Koksara	Ampani To Karlakhutiapada	4.80
25	Dharmagarh	Jaipatna	P.W.D. Road To Kuhuriguma	5.25
26	Dharmagarh	Jaipatna	Lakhabahali To Jamchuan	5.45
27	Dharmagarh	Golamunda	R.D. Road To Ramchandrapur (Road - A)	1.50
28	Dharmagarh	Golamunda	R.D. Road To Sanjiful Juba (Road - B)	3.95
29	Dharmagarh	Golamunda	Sancherigaon To Jhamjharan (Part - I)	9.09
30	Dharmagarh	Golamunda	Sancherigaon To Jhamjharan (Part - II)	6.06
31	Dharmagarh	Dharmagarh	P.W.D. Road To Bhimkhojpada	3.00
<b>31</b>	<b>Sub Total</b>			<b>109.25</b>
1	Kendrapara II	Aul	Tunga To Boulajodi	5.45
2	Kendrapara II	Rajnagar	Hansina To Chakamanipur	12.00
3	Kendrapara II	Rajnagar	R&B Road To Silapokhari	10.50
4	Kendrapara II	Pattamundai	Alapua To Nandalalpatna	2.00
5	Kendrapara II	Rajkanika	P.W.D. Road To Badataila	5.90
6	Kendrapara II	Rajnagar	Santhapada To Chakibanka Road	8.00
7	Kendrapara II	Pattamundai	Vedisahi To Banto Road	3.00
8	Kendrapara II	Rajkanika	Irrigation Embankment To Madhupada	4.65
9	Kendrapara II	Rajkanika	R.D Road To Gharabhanjahola	6.10
10	Kendrapara II	Aul	R.D. Road To Beta	2.60
11	Kendrapara II	Rajkanika	R.D Road To Bajpur	2.00
12	Kendrapara II	Aul	R.D. Road To Padanipal	5.16

SI No	Division	Block	Road Name	Length (Km)
13	Kendrapara II	Pattamundai	Mangarajpur To Deuli	4.10
14	Kendrapara II	Rajnagar	Mahulia To Pokharia Road	2.50
15	Kendrapara II	Aul	Brahmani Ghat To Nalapahi Road	2.52
<b>15</b>	<b>Sub Total</b>			<b>76.48</b>
1	Keonjhar I	Keonjhar	N.H.215 to Badudighar Road	3.02
2	Keonjhar I	Keonjhar	Khajuripani-Kumudabahal road	2.82
3	Keonjhar I	Keonjhar	Haladharpur to Dudurapal road	4.02
4	Keonjhar I	Keonjhar	P.W.D. Road to Ramachandrapur road	1.86
5	Keonjhar I	Keonjhar	Manoharpur to Banamalipur road	1.85
6	Keonjhar I	Keonjhar	Patung to Amunipur road	1.62
7	Keonjhar I	Keonjhar	N.H.6 to Mahuldiha road	2.85
8	Keonjhar I	Keonjhar	N.H.215 to Jamunalia road	2.25
9	Keonjhar I	Keonjhar	Kusumita to Upper Kampdihi road	3.85
10	Keonjhar I	Keonjhar	Potala to Biswanathpur	2.40
11	Keonjhar I	Keonjhar	Tangarani(Belaposi)-Mathuramandali	3.25
12	Keonjhar I	Jhumpura	P.W.D. road to Gidhibas road	2.13
13	Keonjhar I	Saharpada	Jamuda to Arjunposi road	2.50
14	Keonjhar I	Saharpada	Purunapani to Talapada road	4.10
15	Keonjhar I	Saharpada	Gurandijodi to Badabaliposi road	6.60
16	Keonjhar I	Saharpada	R.D.Road (Phulpahadi) to Purunapani road	3.30
17	Keonjhar I	Saharpada	Tendra to Hariharpur road	5.50
18	Keonjhar I	Saharpada	Bilabaliposi road to Mangalpur road	4.00
19	Keonjhar I	Saharpada	Padiaposi to Deuliaposi road	3.50
20	Keonjhar I	Saharpada	R.D. Road to Bhagabil road	2.00
21	Keonjhar I	Saharpada	N.Jagannathapur to Hinjalgadia road	4.10
22	Keonjhar I	Ghatgaon	Binida-Fuljhar road	2.87
23	Keonjhar I	Ghatgaon	Ramamchandapur-Ghuntijhari road	3.63
24	Keonjhar I	Ghatgaon	Mutapur to Bhagaghar road	5.05
25	Keonjhar I	Ghatgaon	R.D.Road Asanbani road	4.76
26	Keonjhar I	Patna	Putugaon to Tentulikhunti road	2.20
27	Keonjhar I	Patna	Bhalupahadi to Kimirdaposi road	3.00
28	Keonjhar I	Patna	P.W.D. Road to Analadiha road	2.79
29	Keonjhar I	Patna	R.D. Road to padampur road	2.82
30	Keonjhar I	Jhumpura	Chauthia to Jagannathpur road	3.88
31	Keonjhar I	Ghatgaon	Chandposi to Deobandha road (R.D.Road to Badajiuli)	2.40
<b>31</b>	<b>Sub Total</b>			<b>100.92</b>
1	Keonjhar II	Champua	Unchabali- Rengalbeda	2.10
2	Keonjhar II	Champua	Jally- Tangarpada	6.49
3	Keonjhar II	Joda	PWD Road- Barapada	4.00
4	Keonjhar II	Keonjhar-II	PWD Road- Kankana	12.20
5	Keonjhar II	Jhumpura	Mahadevpur -Parbatipur	3.30
6	Keonjhar II	Jhumpura	PS Road- Ranipur	3.10
7	Keonjhar II	Jhumpura	Nayagarh- Saradhapanika	3.90
8	Keonjhar II	Jhumpura	Basantapur -Kaijoda	3.80
9	Keonjhar II	Jhumpura	Nayagarh - Jalpaposi	3.50
10	Keonjhar II	Banspal	Uperkaipur- Mamulaposi	4.30
11	Keonjhar II	Banspal	NH-6 -Lunagarh	6.30
12	Keonjhar II	Banspal	Nayakot - Ambadala	3.80
13	Keonjhar II	Banspal	PWD Road- Kadalibadi	2.50
14	Keonjhar II	Banspal	Phuljhar - Sakari	8.80

SI No	Division	Block	Road Name	Length (Km)
15	Keonjhar II	Banspal	NH-6 - Lata	8.00
16	Keonjhar II	Banspal	PWD Road- Kanthada	4.15
17	Keonjhar II	Telkoi	PWD Road-Ramachandrapur	2.00
18	Keonjhar II	Telkoi	PWD Road - Lokanathpur	1.50
19	Keonjhar II	Banspal	Jatra - Ladapani	7.50
20	Keonjhar II	Telkoi	RD Road - Purusottampur	5.50
21	Keonjhar II	Banspal	PWD Road- Panasuan	9.95
22	Keonjhar II	Telkoi	Kaliahata - Kantini	3.70
23	Keonjhar II	Telkoi	Kaliahata- Karangapal	5.15
24	Keonjhar II	Telkoi	RD Road(Deuldiha) - Ragada	8.30
25	Keonjhar II	Champua	Kankada -Nuagaon	2.50
26	Keonjhar II	Champua	Basudevpur- Sunariposi	3.15
<b>26</b>	<b>Sub Total</b>			<b>129.49</b>
1	Bhubaneswar	Bolagarh	Badanayapalli to Suanal	4.00
2	Bhubaneswar	Bolagarh	RD road to Ekdalia	2.11
3	Bhubaneswar	Bolagarh	Kalanga to Paikasahi via Phiripirapatna	2.02
4	Bhubaneswar	Bolagarh	Deuli to Talatumba road	2.50
5	Bhubaneswar	Tangi	Nalasingh to Totapada	3.20
6	Bhubaneswar	Balianta	Balipatna RD road to Hotasahi	2.40
7	Bhubaneswar	Balianta	Prataprudrapur to Nuasahi	2.90
8	Bhubaneswar	Balianta	PMC to Bhaichuamandagada	3.30
9	Bhubaneswar	Balianta	Balianta to Chandanbasta	3.25
10	Bhubaneswar	Balipatna	Nariso Meladanda to Chandiapada	2.30
11	Bhubaneswar	Balipatna	Nariso to Badapokharisahi	2.00
12	Bhubaneswar	Balianta	Bisuniapada to Baliama	1.50
13	Bhubaneswar	Balianta	Bhargabi Right Embankment to Terabatia	2.90
14	Bhubaneswar	Balipatna	Dalakasati Sanmachhapur	3.00
15	Bhubaneswar	Balipatna	Madhuban Darada road to Deulapokhari	1.86
16	Bhubaneswar	Balipatna	Bhakarsahi to Naranpur	3.15
17	Bhubaneswar	Banapur	R D road to Kandha Ambajhar	2.00
18	Bhubaneswar	Khurda	Naranagarh Girls High School to Bhogapur	2.16
<b>18</b>	<b>Sub Total</b>			<b>46.55</b>
1	Koraput	Koraput	N.H-43 To Chapsil Road	1.85
2	Koraput	Dasmantpur	P.S. Road To Runjaguda	4.50
3	Koraput	Kundra	Dighapur to Gumar	3.00
4	Koraput	Nandapur	PWD (RD) road to Badliguda	4.50
5	Koraput	Koraput	P.W.D Road To Ambagam	2.70
6	Koraput	Lamtaput	RD road to Jodaput	7.50
7	Koraput	Nandapur	RD road to Sobhaput	6.70
8	Koraput	Nandapur	RD road to Khadaput Boding	4.50
9	Koraput	Boriguma	NH-43 to Banduguda	10.19
10	Koraput	Kundra	Beheraguda to Katriguda	7.00
11	Koraput	Boipariguda	PWD Road to Kadamguda	2.00
12	Koraput	Lamtaput	RD road to Maliguda via Bandhanpada.	3.60
13	Koraput	Boriguma	Aunli to Majhia	2.08
14	Koraput	Kotpad	Ghatarla to Kusumguda	1.54
15	Koraput	Kundra	RD Road to Nuaguda	1.30
16	Koraput	Lamtaput	RD road to Guneipada.	1.30
17	Koraput	Kotpad	Kharagpur to Kumahandi	5.60
18	Koraput	Lamtaput	RD road to Lamanda	1.20
19	Koraput	Koraput	N.H-43 to Panasput Road	4.60

SI No	Division	Block	Road Name	Length (Km)
20	Koraput	Koraput	R.D Road to Daleiput	1.20
21	Koraput	Lamtaput	MDR to Silpeda	1.55
22	Koraput	Jeypore	MDR SH-48 to Bali Pujariput	1.55
23	Koraput	Nandapur	RD road to Khingmung Karanjaguda	4.50
24	Koraput	Dasmantpur	Mujango to Champapadar (Dengajaniguda)	5.20
25	Koraput	Jeypore	MDR SH48 to Singbandha	4.83
26	Koraput	Jeypore	Dhanpur to Targei	2.08
27	Koraput	Kotpad	Batasana to Thakadugulahandi	5.50
28	Koraput	Kundra	Raniguda to Atigam	5.45
29	Koraput	Boriguma	Katharagada to Mankidiatal Road	4.50
30	Koraput	Boriguma	Katharagada to Katahandi Road	5.50
31	Koraput	Kundra	Ghumar to Hatakudupi	2.80
32	Koraput	Kundra	Bagderi to Kantinikunda	4.00
<b>32</b>	<b>Sub Total</b>			<b>124.31</b>
1	Sunabeda	Laxmipur	Upperchampi (P.W.D. Road) to Talachampi	3.00
2	Sunabeda	Laxmipur	R.D Road to Kenduwada	2.50
3	Sunabeda	Semiliguda	Sorisapadar(NH-26) to Bhitarkota	11.00
4	Sunabeda	Narayanpatna	P.S Road to Tingnaput	1.80
5	Sunabeda	Laxmipur	P.S. Road to Maligan	2.50
6	Sunabeda	Laxmipur	P.W.D. Road to Niraniguda	2.10
7	Sunabeda	Semiliguda	Bilaput to Bhitarsubai	1.00
8	Sunabeda	Pottangi	Sipaiput(NH-26) to Malkarbandha	3.40
9	Sunabeda	Laxmipur	P.S. Road to Ramijholla	3.00
10	Sunabeda	Laxmipur	P.W.D. Road to Jholaguda	8.00
11	Sunabeda	Pottangi	Jamuguda (NH-26) to Bitra	7.50
12	Sunabeda	Semiliguda	Malimarla to Uppergelaguda	1.50
13	Sunabeda	Semiliguda	N.A.D to Balda	2.60
14	Sunabeda	Semiliguda	P.W.D Road to Adamunda	4.00
15	Sunabeda	Narayanpatna	SH-50 to Pachingi	3.30
16	Sunabeda	Laxmipur	Upperchampi to Jambirijhola (Upper Bilangsil)	6.10
17	Sunabeda	Semiliguda	R.D. Road to Deula	3.00
18	Sunabeda	Semiliguda	Nalco road to Masuriguda (Missinguda)	1.00
19	Sunabeda	Pottangi	R.D. Road to Debaguntha via Sangamguda	3.80
20	Sunabeda	Pottangi	(A) P.W.D. Road (R.D. Road) to Marialpadu	0.95
21	Sunabeda	Pottangi	(B) R.D. Road to Putapadu	0.95
22	Sunabeda	Semiliguda	NH-43 (26) to Daleiguda	6.00
23	Sunabeda	Semiliguda	NH-43 (26) to Bileiguda	2.80
24	Sunabeda	Pottangi	R.D. Road(P.W.D Road) to Teda	1.40
25	Sunabeda	Pottangi	Dalapatiguda to Pangiguda via Dusariguda	2.40
26	Sunabeda	Pottangi	(A) NH-43(26) to Sakirai	1.70
27	Sunabeda	Pottangi	(B) NH-43 (26) to Dumuriguda	0.85
28	Sunabeda	Semiliguda	N.H.-43(26) to Kadamguda	2.10
29	Sunabeda	Semiliguda	Charangul to Hanjaraguda	2.30
30	Sunabeda	Semiliguda	Tiapar to Phulbandha	2.00
31	Sunabeda	Semiliguda	Mukhibedi to Challanput	2.60
32	Sunabeda	Pottangi	RD Road to Guntha, Jhankarada via Kapatiguda	4.00
33	Sunabeda	Pottangi	NH-43 (26) to Siura	3.10
34	Sunabeda	Pottangi	P.W.D Road to Upperbandha	1.60
35	Sunabeda	Laxmipur	P.W.D. Road to Bogeipadar	2.00
36	Sunabeda	Narayanpatna	P.S. Road(PMGSY) to Semla	4.25

SI No	Division	Block	Road Name	Length (Km)
37	Sunabeda	Narayanpatna	PWD Road to Sabaput, Bisipur	3.10
38	Sunabeda	Bandhugaon	P.W.D.Road to Kesabadhra	1.80
39	Sunabeda	Bandhugaon	P.W.D. Road to Jhumuka	3.00
40	Sunabeda	Bandhugaon	Jarpa (P.W.Droad) to Lundurukana	5.00
41	Sunabeda	Narayanpatna	P.W.D.Road to Khajaguda	2.40
42	Sunabeda	Narayanpatna	P.W.D Road to Dhaiguda	2.50
43	Sunabeda	Narayanpatna	Bijaghati to Keragan	3.00
44	Sunabeda	Laxmipur	P.W.D. Road(P.S Road) to Putsil	4.00
<b>44</b>	<b>Sub Total</b>			<b>136.90</b>
1	Baripada	Moroda	Bhaliadiha to Sunahaja	7.00
2	Baripada	Moroda	PWD Road to Idor	3.00
3	Baripada	Betnoti	RD Road at Durgapur to Sardiha	4.50
<b>3</b>	<b>Sub Total</b>			<b>14.50</b>
1	Karanjia	Bangiriposi	Andala to Naikali	7.00
2	Karanjia	Bangiriposi	RD road to Kurkutia	2.00
3	Karanjia	Bangiriposi	RD road to Mahupahadi	1.00
4	Karanjia	Bangiriposi	RD road to Majhigaon	2.30
5	Karanjia	Bangiriposi	RD road to Kundalabani	5.60
6	Karanjia	Bangiriposi	Rayan to Pandubadi	4.50
7	Karanjia	Bangiriposi	Rayan to Ramaharipur	4.50
8	Karanjia	Bangiriposi	MDR-45 to Jamdapa	1.10
9	Karanjia	Bangiriposi	Ghatkuanri to Domuhani	1.10
10	Karanjia	Bisoi	RD road to Chuakankar	2.90
11	Karanjia	Bisoi	NH-6 to Hatichhad	7.60
12	Karanjia	Bisoi	SH-50 to Sunajodia	5.00
13	Karanjia	Bisoi	SH-50 to Gargadi	2.50
14	Karanjia	Bisoi	SH-50 to Banapokharia	2.50
15	Karanjia	Bisoi	Baneikala to Patijhari	4.10
16	Karanjia	Sukruli	RD road to Silmaposi	2.25
17	Karanjia	Raruan	RD road to Purunapani	1.50
18	Karanjia	Jashipur	Gandirabeda chhak (Aski) to Asura	4.10
19	Karanjia	Jashipur	Badasialnai to Sansialnai	2.75
20	Karanjia	Jashipur	Siltia to Banapandugandi	2.88
21	Karanjia	Karanjia	PWD road to Baliposi	1.10
22	Karanjia	Karanjia	RD road to Jhatiali	2.25
23	Karanjia	Karanjia	NH-6 to Jarali	3.05
24	Karanjia	Karanjia	NH-6 to Jarasahi	2.05
25	Karanjia	Thakurmunda	Thakurmunda (R D Road ) to Niscintpur	4.63
26	Karanjia	Thakurmunda	S.H-53 to Nipania	2.55
27	Karanjia	Thakurmunda	S.H-53 o Padhiarsahi	2.60
28	Karanjia	Thakurmunda	R D Road to khasakudar	2.84
29	Karanjia	Thakurmunda	R D Road to San-Andharikhaman	1.82
30	Karanjia	Thakurmunda	R D Road to Chaulajhari	3.54
31	Karanjia	Thakurmunda	Salchua (Nada) to Karadapa	3.00
<b>31</b>	<b>Sub Total</b>			<b>96.61</b>
1	Rairangpur	Bahalda	Fatatanger to Patkadih ( Sagjodi )Road	2.50
2	Rairangpur	Bahalda	Tarana to Patramahulpani ( Thakurbadi ) Road	2.00
3	Rairangpur	Tiring	Jirei to Nandua ( Bijaybasa ) Road	2.90
4	Rairangpur	Tiring	Rengalbeda to Dhobadhubani ( Gobrasol ) Road	2.60
5	Rairangpur	Tiring	Nuadihi to Baldapada road	1.50



SI No	Division	Block	Road Name	Length (Km)
6	Rairangpur	Tiring	S.H.-50 at Nuagaon to Dakadihi (Dinasasan) road	1.50
7	Rairangpur	Kusumi	O.D.R to Ghadadega road	6.93
8	Rairangpur	Kusumi	R.D. road to Dhakata road(Dova to Ralibeda)	4.70
9	Rairangpur	Kusumi	ODR to Dudhijharan	1.35
10	Rairangpur	Rairangpur	M.D.R to Sanchampouda Road	4.90
11	Rairangpur	Rairangpur	Sundhal to Katupit(N)	8.50
12	Rairangpur	Rairangpur	Guhaldangri to Dublabeda	4.90
13	Rairangpur	Rairangpur	Kuldiha to Kahutuka Road	5.80
14	Rairangpur	Rairangpur	Badgaon to Rehedakocha	2.40
15	Rairangpur	Rairangpur	Gorumahisani to Gidighaty	3.30
16	Rairangpur	Rairangpur	Guhaldangri to Jampani	1.80
17	Rairangpur	Bijatala	Dalki to Badbil road	8.46
18	Rairangpur	Bijatala	R.D road to Kaduani road	4.63
19	Rairangpur	Bijatala	(A)S.H -50(Madansila PMGSYroad) to Sanjharan	3.26
20	Rairangpur	Bijatala	(B)Raihari ( N.H - 6 ) to Jaldiha	3.89
21	Rairangpur	Jamda	R.D Road To Hensda	1.83
22	Rairangpur	Kusumi	R.D. Road to Changbaria road	2.70
23	Rairangpur	Kusumi	R.D road to Badjaidhanposi road	3.09
24	Rairangpur	Bijatala	Chadheipahadi to Balarampur	7.33
25	Rairangpur	Kusumi	ODR to Dighia road (RD Road to Sanjoidanposi)\	1.10
<b>25</b>	<b>Sub Total</b>			<b>93.86</b>
1	Nawrangpur	Dabugam	Badaoloma to Khutuluguda	3.50
2	Nawrangpur	Dabugam	RD Road to Barkiguda road	3.03
3	Nawrangpur	Dabugam	PWD Road to Jandriguda road	2.50
4	Nawrangpur	Dabugam	Rabanaguda to Sapadharaguda	2.10
5	Nawrangpur	Kosagumuda	Sana-Amda to Neigaon	4.80
6	Nawrangpur	Nandahandi	Bhanjaguda to Poluguda	2.50
7	Nawrangpur	Nandahandi	RD Road to Gajiaguda	2.00
8	Nawrangpur	Nabarangapur	R.D Road to Boxaguda	2.00
9	Nawrangpur	Nowrangpur	RD Road to Kochiaguda	1.55
10	Nawrangpur	Nowrangpur	RD Road to Sonuguda	2.70
11	Nawrangpur	Papadahandi	SH - 39 Jn. To Birisola	3.20
12	Nawrangpur	Papadahandi	Biriguda to Jhidingiguda	1.30
13	Nawrangpur	Papadahandi	RD Road to Kartiguda	11.90
14	Nawrangpur	Papadahandi	Dhansuli to Palasaguda	4.20
15	Nawrangpur	Papadahandi	NH Jn. To Disariguda	1.10
16	Nawrangpur	Papadahandi	Kodabaata to Haradaguda	2.00
17	Nawrangpur	Tentulikhunti	Project road to Nuapujariguda	1.40
18	Nawrangpur	Tentulikhunti	Bhitartmengra to Boriguda	1.50
19	Nawrangpur	Tentulikhunti	RD road to Nuaguda	0.50
20	Nawrangpur	Dabugam	Pakhanaguda to Maniaguda	3.25
21	Nawrangpur	Papadahandi	Ghusarabeda to Ratiguda	5.00
22	Nawrangpur	Papadahandi	Kodabhata to Mundaguda	1.40
23	Nawrangpur	Papadahandi	RD Road Jn. To Sikadaguda	3.50
24	Nawrangpur	Papadahandi	Biriguda to Khutiaguda	3.50
25	Nawrangpur	Papadahandi	Miriguda to Dakribeda	3.50
26	Nawrangpur	Papadahandi	SH - 39 Jn. to Dalchaparaguda	3.80
27	Nawrangpur	Papadahandi	NH Jn. To Minja	4.00
28	Nawrangpur	Papadahandi	PS Road to Kukurabindha	2.50

SI No	Division	Block	Road Name	Length (Km)
29	Nawrangpur	Papadahandi	Dongra to Kumbharaguda	4.70
<b>29</b>	<b>Sub Total</b>			<b>88.93</b>
1	Nuapada	komna	Batibahal to Sunabeda(Part-A)	10.00
2	Nuapada	komna	Batibahal to Sunabeda(Part-B)	10.00
3	Nuapada	komna	Cherichuan to Kankermanji(Part-A)	9.00
4	Nuapada	komna	Cherichuan to Kankermanji(Part-B)	8.00
5	Nuapada	komna	Kotrabeda to Deosil	8.00
6	Nuapada	Boden	Patdarha to Kathphar(Part-A)	7.00
7	Nuapada	Boden	Patdarha to Kathphar(Part-B)	6.00
8	Nuapada	komna	Sunabeda to Gatibeda	5.00
9	Nuapada	komna	Sunabeda to Jamgaon	6.50
10	Nuapada	komna	Sunabeda to Soseng	8.00
11	Nuapada	Nuapada	SH-3 Sunsunia to Dehenpara	3.90
12	Nuapada	Nuapada	RD Road to Bhalukana	2.00
13	Nuapada	Nuapada	Amodi to Tamkidadar(Road-A)	1.60
14	Nuapada	Nuapada	RD Road to Negipali(Road-B)	2.00
15	Nuapada	Nuapada	RD Road to Sethjampani via Masrangi	4.20
16	Nuapada	komna	Poinr to Anupgad	1.50
17	Nuapada	komna	Komna Nuagaon Road to Patpani	4.00
18	Nuapada	komna	PWD Road to Tukelapada	1.90
19	Nuapada	komna	PWD Road to Bandajore via Barnapat	2.60
20	Nuapada	komna	Chhata to Kotenpara	2.30
21	Nuapada	komna	Kurumpani-Lakhna Road to Thakurpali	2.10
22	Nuapada	komna	Thango to Mawalbhata	5.00
23	Nuapada	Khariar	Vijaypur to Gordhuapadar	2.50
24	Nuapada	Khariar	SH-16 to Sandohel	1.40
25	Nuapada	Khariar	MDR-121 to Kikiribeda	1.50
26	Nuapada	Khariar	Lanji to Vemapadar	4.20
27	Nuapada	Khariar	Deobahal to Thongopada	1.60
28	Nuapada	Khariar	Bankapur to Khairbadi	2.50
29	Nuapada	Khariar	Ranimunda to Palma	1.30
30	Nuapada	Khariar	NH-217 to Sandibahali	1.60
31	Nuapada	Khariar	Chancharabhata to Hanspada	1.50
32	Nuapada	sinapali	Timpur to Rebedi	3.60
33	Nuapada	sinapali	Palsapada to Dongergaon	1.30
34	Nuapada	sinapali	PS Road to Sonversa	2.80
35	Nuapada	sinapali	PWD Road to Karlapani	2.70
36	Nuapada	sinapali	Telekote to Sindursil	2.60
37	Nuapada	Boden	PWD Road to Mahulpadar	4.00
38	Nuapada	Boden	Bhainsadani to Sirigidi	5.30
39	Nuapada	komna	NH-217 to Bilenjore	2.30
40	Nuapada	komna	Mendhatal to Dangargaon via Dedenga	3.00
<b>40</b>	<b>Sub Total</b>			<b>156.30</b>
1	Phulbani	Raikia	Kilkia (T-5) to Didrabadi	13.50
2	Phulbani	Chakapad	RD Road to Pandrisima	3.30
3	Phulbani	G. Udayagiri	RD Road to Sakadi	5.80
4	Phulbani	Baliguda	Sudra to Tikarabaju	9.00
5	Phulbani	Daringibadi	Pangaraha (NH-217) to Iripisura	7.50
6	Phulbani	Khajuripada	PWD Road to Meru(Lambabadi)	8.00
7	Phulbani	K. Nuagaon	Sainipada to Daugaon	4.20
8	Phulbani	Daringibadi	Badipadar (NH-217) to Baimela	13.20

SI No	Division	Block	Road Name	Length (Km)
9	Phulbani	Khajuripada	Garakumpa to Balisugri	4.00
10	Phulbani	Khajuripada	Nediguda to Gundribadi	2.00
11	Phulbani	K. Nuagaon	PWD Road T-5 Dharampur to Letingia (Reach-I) RD0/0 to 1/110 Km & 2/100 to 9/00 Km	9.00
12	Phulbani	Kotagarh	Subarnagiri to Parigada Road (Reach - I) RD 0/0 to 4/260 & 4/560 to 5/790 & 6/050 to 9/0 Km	8.84
13	Phulbani	Kotagarh	Subarnagiri to Parigada Road (Reach-IV) RD 9/0 to 18/0 Km	9.00
<b>13</b>	<b>Sub Total</b>			<b>97.34</b>
1	Puri	Kanas	N.J. Sadak to Balipada-A	2.40
2	Puri	K.Prasad	Badabhui to Gangadharur	1.10
3	Puri	K.Prasad	PWD road to Anandpur	0.80
4	Puri	K.Prasad	PWD road to Kamalasingh	1.83
5	Puri	K.Prasad	Badajhada to Samantarapur	2.20
6	Puri	K.Prasad	PWD road to Noliasahi	2.30
7	Puri	K.Prasad	PWD road to Paikarapur	1.10
8	Puri	Puri	Siruli Project road to Jirakandi	1.10
9	Puri	K.Prasad	R.D. road to Kahneipur	1.30
10	Puri	Pipili	Kasarda to Rajtei	2.08
11	Puri	Pipili	T-5 to Nalihana	1.24
12	Puri	Pipili	N.H.203 to Potal	1.86
13	Puri	Pipili	N.H.203 to Baragarh	1.10
14	Puri	Pipili	T-5 to Solana	3.94
15	Puri	Pipili	L-24 to Sarola	1.20
16	Puri	Pipili	N.H.203 to Malibarahi	1.33
17	Puri	Pipili	S.H.13 to Sunapada	2.52
18	Puri	Pipili	T-6 to Raigurupur	1.00
19	Puri	Pipili	T-6 to Subudhipada	1.20
20	Puri	Pipili	N.H.203 to Gobardhanpur S. Nagar	2.00
21	Puri	Delang	T-4 to Jayapur	2.00
22	Puri	Delang	T-1 to Golapada	1.20
23	Puri	Delang	T-7 to Tikarpada	7.00
24	Puri	Satyabadi	Algum PWD road to Baniasahi	2.00
25	Puri	Satyabadi	Algum WD road to Bagasahi	0.60
26	Puri	Satyabadi	N.Someswarapur to Bastapada	0.80
27	Puri	Satyabadi	Budhang Canal to Balisahi	2.02
28	Puri	Satyabadi	R.D. road to Otarakera	2.50
29	Puri	Puri	L-34 to Odasamal	2.00
30	Puri	Puri	R.D. road to Jagannathpur	2.50
31	Puri	Puri	N.H.203 to Nilachakranagar	2.70
32	Puri	Puri	Malatipatpur R.D. road to Rahangiria via-Kanchinala Irrig. Embkt. (golasahi)	7.00
33	Puri	Puri	N.H.203 to Apila	4.80
34	Puri	Puri	N.J. Sadak to Karadi	1.80
35	Puri	Brahmagiri	RD Road to Sahaspur	3.28
36	Puri	Brahmagiri	L-76 to Jagannathpur	0.60
37	Puri	Brahmagiri	N.H.203A to Gokhara	1.60
38	Puri	Brahmagiri	N.H.203 A to Bentapur	1.66
39	Puri	Brahmagiri	L-58 to Baghalanji	2.01
40	Puri	Brahmagiri	R.D. road to Haridas	2.57
41	Puri	Brahmagiri	PWD road to Mirzapur	0.75

SI No	Division	Block	Road Name	Length (Km)
42	Puri	Brahmagiri	L-69 to Danduasipada	2.09
43	Puri	Brahmagiri	Sikatnuapada to Sisupur	1.00
44	Puri	Kanas	R.D. Road dto Maitratrilochanpur	1.80
45	Puri	Kanas	R.D. road to Delang Charipada	3.50
46	Puri	Kanas	L-28 to Rudhupur	8.00
47	Puri	Kanas	Gadakhara to Malisahi	2.50
48	Puri	K.Prasad	R.D. road to Jamuna	3.77
49	Puri	K.Prasad	R.D. Road to Mahanisa	3.00
50	Puri	K.Prasad	PWD road to Anlakuda	1.90
51	Puri	K.Prasad	Bhawanipur to Parala	1.67
52	Puri	K.Prasad	Manikpatna to Sebakpur	2.70
53	Puri	K.Prasad	PWD road to kandeswar	2.80
54	Puri	K.Prasad	Naba to Samantarapur	1.71
55	Puri	K.Prasad	Badadanda to Khalamunha	1.00
56	Puri	K.Prasad	R.D. road to Adalabad	1.00
57	Puri	Pipili	Podaguna to K.S. Patna	1.30
<b>57</b>	<b>Sub Total</b>			<b>124.73</b>
1	Nimapara	Nimapara	P.K Road to Porakana	3.00
2	Nimapara	Gop	RD Road to Simili	1.50
3	Nimapara	Nimapara	Bamnai to Tihula	5.00
4	Nimapara	Gop	M.B Road to Khadisa	6.00
5	Nimapara	Gop	Mohanty sahi (L-34) to Morada	1.50
6	Nimapara	Gop	R.D Road to Desunthi	3.00
7	Nimapara	Astaranga	Edbansa to Paikhala	1.90
8	Nimapara	Gop	RD Road to Balibasta	2.30
9	Nimapara	Satyabadi	Padmapur to Rudupur	0.70
10	Nimapara	Nimapara	T-5 to Chhatahar	3.20
11	Nimapara	Nimapara	P.K Road to Arilo	4.35
12	Nimapara	Nimapara	Tititngapada to Kantilo	2.00
13	Nimapara	Astaranga	L-28 to Osihan	2.10
14	Nimapara	Astaranga	Manduki to Olara	2.65
15	Nimapara	Astaranga	L-23 to Olihan	1.80
16	Nimapara	Satyabadi	Rudupur to Malasahi	1.60
17	Nimapara	Gop	RD Road to Soma	1.50
18	Nimapara	Gop	Baulanga to Panchena	3.06
19	Nimapara	Astaranga	L-47 to Badaola	2.47
20	Nimapara	Satyabadi	Gabakunda to Chakarapada	1.30
21	Nimapara	Kakatpur	PWD Road (T3) to Osalanga	1.55
22	Nimapara	Gop	RD Road to Ampada	3.00
23	Nimapara	Astaranga	R.D. Road Karanjapur	1.55
24	Nimapara	Astaranga	PWD Road (T-2) to Silari	4.20
25	Nimapara	Nimapara	Porakana to Juanlo	1.50
<b>25</b>	<b>Sub Total</b>			<b>62.73</b>
1	Sambalpur	Redhakhhol	Charmal to Keutibahali	3.00
2	Sambalpur	Naktideul	RD Road to Panduakhhol(Upto Podakhhol)	3.00
3	Sambalpur	Redhakhhol	RD Road to Sarapal	2.50
4	Sambalpur	Redhakhhol	SH-24 to Dimirimunda	2.00
5	Sambalpur	Redhakhhol	Rengali to Sunamudi	6.50
6	Sambalpur	Jujumura	NH-42 to Budhiakata	2.40
7	Sambalpur	Kuchinda	MDR 26A to Ainlaposi	1.30
8	Sambalpur	Kuchinda	Telitleimal to Dhanudihi	3.50

SI No	Division	Block	Road Name	Length (Km)
9	Sambalpur	Kuchinda	Paruabhadi to Pandrikata	0.85
10	Sambalpur	Jamankira	RD Road to Banjari	5.30
11	Sambalpur	Dhankuda	NH-6 to Gengtupali	1.43
12	Sambalpur	Rengali	Babuchakuli to Meherpada	1.62
13	Sambalpur	Jujumura	Dhalpal to Laida	1.62
14	Sambalpur	Dhankuda	RD Road to Bakbira	2.85
15	Sambalpur	Jujumura	NH-6 to Maliamunda	2.70
16	Sambalpur	Maneswar	PWD Road to Saradhapali	1.08
17	Sambalpur	Maneswar	PWD Road to Jampali	0.71
18	Sambalpur	Maneswar	RD Road to Karlabahal	1.00
19	Sambalpur	Rengali	PWD Road to Bhagia	1.70
20	Sambalpur	Maneswar	RD Road to Jharmunda	2.93
21	Sambalpur	Jamankira	Lepeikani to Babejori Road	2.90
22	Sambalpur	Jamankira	RD Road to Langabahal (San)	3.20
23	Sambalpur	Jamankira	N.H.-6 to Biswalpali	1.45
24	Sambalpur	Jamankira	RD Road to Dehurunimal	2.80
25	Sambalpur	Jamankira	N.H.-6 to Patrapalli	0.82
26	Sambalpur	Bamra	Uttargaon to Dangakhunti	2.22
27	Sambalpur	Bamra	Dumku to Kinabaga	5.28
28	Sambalpur	Redhakhhol	Rengali to Harizanpada (Upto Chakamunda)	4.00
<b>28</b>	<b>Sub Total</b>			<b>70.65</b>
1	Sonepur	Ullunda	Salepali Chhak to Badmal	3.60
2	Sonepur	Ullunda	PWD Road to Dakhinpalli	2.00
3	Sonepur	Ullunda	Nakdein to Pipalkata (Meghanad)	10.00
4	Sonepur	Sonepur	T-L RD Road to Jhankarpali	3.20
5	Sonepur	Sonepur	T-L RD Road to Luhurapali	2.35
6	Sonepur	Sonepur	Baslat to Dumerkhol	3.84
7	Sonepur	Sonepur	NH-224 to Majhimunda-1	1.65
8	Sonepur	Sonepur	NDPS road to Kudadera	2.61
9	Sonepur	B.M. Pur	Hanumanpalli Chhak to Deulamunda	3.45
10	Sonepur	B.M. Pur	PWD Road to Phulchara	1.90
11	Sonepur	B.M. Pur	Janakpur (RD Road) to Rajanpali	3.20
12	Sonepur	B.M. Pur	PWD Road to Dahanipali	8.00
13	Sonepur	B.M. Pur	Kardapal to Barjula	3.00
14	Sonepur	B.M. Pur	BM Pur-Amarpali RD Road to Bankia	2.52
15	Sonepur	B.M. Pur	BM Pur Amarpali RD Road (Badmal) to Keshalaga	4.80
16	Sonepur	Tarava	Tarava-Bramhani RD Road to Rugudipali	3.60
17	Sonepur	Tarava	Kamsara-Badtenda Road to Tithipali	4.45
18	Sonepur	Tarava	Kamasara-Balikhamar to Khairabhadi	3.33
19	Sonepur	Tarava	Sargaj-Arda Road to Budhakhaman	2.66
20	Sonepur	Tarava	Sibtala-Lukapada Road to Keketpali	2.25
21	Sonepur	Dunguripali	Sunapali Chhak to Chamarpur	3.50
22	Sonepur	Dunguripali	Sanabhalupali to Chhanaabera	5.00
23	Sonepur	Binika	FM RD Road to P Sahajbahal	3.00
24	Sonepur	Binika	Gulunda (RD Road) to Piteipali	2.00
25	Sonepur	Binika	MDR-39 to Pandakital	1.35
26	Sonepur	Dunguripali	PWD Road to Katapali	3.00
27	Sonepur	Dunguripali	Gajabandha to Kainsakanda	2.00
28	Sonepur	Dunguripali	Cherupali-Agalpur RD Road to Telimal	3.00
29	Sonepur	Ullunda	MJ RD road to Jagannathpali -2	2.00

SI No	Division	Block	Road Name	Length (Km)
30	Sonepur	Ullunda	Kadodara-Khuntulipali RD Road to Bairagipali	6.50
31	Sonepur	Dunguripali	Cherupali-Agalpur Road to Gajmal	2.60
32	Sonepur	Ullunda	PWD road to Dhalei	3.50
33	Sonepur	Ullunda	Irrigation road to Goyelguri	3.50
34	Sonepur	Ullunda	Irrigation road to Radum	4.20
35	Sonepur	Ullunda	PWD road to Hatipahul	3.00
36	Sonepur	B.M. Pur	Tangarsahi Chhak to Khambeswaripalli	2.00
37	Sonepur	B.M. Pur	BMPur Amarpalli road to Ranapalli	1.50
38	Sonepur	B.M. Pur	Jatasingha Chowk to Anandapur	1.50
39	Sonepur	B.M. Pur	BMPur Amarpalli RD road to Dadarpalli	1.50
40	Sonepur	B.M. Pur	Bolipali to Baghartula	2.10
41	Sonepur	Sonepur	PWD Road to Bankbija	2.60
42	Sonepur	Sonepur	PWD Road to Pratappur	1.20
43	Sonepur	Sonepur	NH-224 to Gatarkela	4.70
44	Sonepur	Sonepur	RD Road to Baldapali	1.98
45	Sonepur	Sonepur	NH-224 to Singhari	2.00
46	Sonepur	Sonepur	BA RD Road to Karlakhman	3.85
47	Sonepur	Sonepur	LK RD Road to Badipadia	4.15
48	Sonepur	Sonepur	Asurmunda to Majhimunda	2.00
49	Sonepur	Sonepur	NDPS Road (MDR-39) to Nagapali	5.20
50	Sonepur	Sonepur	MK RD Road to Singhbahali	2.50
51	Sonepur	Sonepur	RD Road to Sankadalipali	1.45
52	Sonepur	Tarava	Kamsara-Balikhmar to Sukhilasar	3.75
53	Sonepur	Tarava	Kamsara-Balikhmar to Polbandh	3.50
54	Sonepur	Tarava	Arda to Balipatha	4.10
55	Sonepur	Tarava	Brahmani (Khuntabandha) road to Pandrapitha	4.60
56	Sonepur	Tarava	Sargaj Arda Road to Jamkani	2.00
57	Sonepur	Tarava	Tarva-Brahmani road to Guhiraghat	2.00
58	Sonepur	Dunguripali	Lingamarini (NH-57) to Chitikilibandhali	5.40
59	Sonepur	Dunguripali	Badkarley to Amamunda	5.30
60	Sonepur	Dunguripali	Sahajbahal Canal Road to Kulthipali	2.60
61	Sonepur	B.M. Pur	Janakpur Chhak to Jubarajpur	4.81
62	Sonepur	Sonepur	PS Road to Salepali	1.50
63	Sonepur	Binika	Canal Road to Khaliapali	6.45
64	Sonepur	Dunguripali	Bandhapali Road to Barpadar	2.50
65	Sonepur	Tarava	Kamsara-Balikhmar to Charniapali	2.50
66	Sonepur	B.M. Pur	PWD Road to Kelgaon	1.70
67	Sonepur	Sonepur	Mahule to Uperphabsi	4.92
68	Sonepur	Ullunda	PWD road to Naikpara to PWD road Rathpur chowk (Bagchhera)	9.00
69	Sonepur	Binika	Baunsuni to Bhikabahali	3.85
70	Sonepur	Tarava	Kamsara-Badtenda Road to Surajmunda	2.98
71	Sonepur	Ullunda	PWD road to Limbapali-2	2.00
72	Sonepur	Tarava	Tarva-Brahmani road to Nadhara	2.50
73	Sonepur	Tarava	Tarva - Panimura road to Sanbhainro	1.90
74	Sonepur	Dunguripali	Lingamarin Road to Mahulpali	1.60
75	Sonepur	Dunguripali	NH201 to Sargul	1.90
76	Sonepur	Sonepur	Bahirkhaman to Mahulkhunta	1.20
<b>76</b>	<b>Sub Total</b>			<b>245.35</b>
1	Sundargarh	Sundargarh	Bhedabahal to Bamandihi Via Bankubahal	5.15
2	Sundargarh	Balisankara	Talsara to Rengali	7.91

SI No	Division	Block	Road Name	Length (Km)
3	Sundargarh	Kutra	SH-10 to Dhipapada	3.57
4	Sundargarh	Kutra	Khatkurbahal to Dhipapada Road	8.13
5	Sundargarh	Lefripada	Mahikani to Dharuadihi	2.80
6	Sundargarh	Subdega	MDR Road to Badamalbasti	1.91
7	Sundargarh	Sundargarh	Karla to Sahupara	3.55
8	Sundargarh	Sundargarh	Kulta to Kuanrmal Via Goyalijhumpa	3.10
9	Sundargarh	Sundargarh	Jamtalia to Kabanga via Colonypara	4.76
10	Sundargarh	Tangarpali	Pudadihi to Jamunadhip Via Khamarbahal (Road-A)	2.20
11	Sundargarh	Kutra	PS Road to Automunda	2.65
12	Sundargarh	Baragaon	RD Road to Dudungpada	1.25
13	Sundargarh	Kutra	SH-10 to Panchupada	6.00
14	Sundargarh	Tangarpali	Nialiapali to Kurludhipa	2.00
15	Sundargarh	Rajgangpur	Bahium to Kichinda	8.10
16	Sundargarh	Subdega	SH-31 to Bhagpalbasti	1.65
17	Sundargarh	Subdega	RD Road to Dehurimunda	2.60
18	Sundargarh	Sundargarh	Majhapada to Aunlajore Via Chandilipada	2.50
19	Sundargarh	Tangarpali	RD road to Kripsira	1.10
<b>19</b>	<b>Sub Total</b>			<b>71.98</b>
<b>787</b>				<b>2739.55</b>

**Appendix 2: Rural Roads: Environmental Checklist****RURAL ROADS: ENVIRONMENTAL CHECKLIST**
**PWD ROAD TO KURADIHA BLOCK: BALESWAR SADAR**  
**CORE NETWORK CODE: L 079**

<b>District</b>	<b>Baleswar</b>
<b>Block</b>	Baleswar
<b>Name of the Sub Project Road</b>	PWD Road to Kuradiha
<b>Road No</b>	L -079
<b>Length</b>	2.00 Km.

**A. Climatic Conditions**

Temperature	High: 44	Low: 10
Humidity	High: 86	Low: 45
Rainfall	mm/year 1248	
Rainy Season	June to September	

**B. Location of the Road and Generic description of Environment**

No	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)	√		Distance from Coastline: 38 Km. ( ) more than 50% ( √ ) less than 20%
2.	Type of Terrain-(Plain/Hilly/Mountainous etc.) <i>(Explain the topography of the area and how many km of the road are located in the hilly area)</i>	√		The road passes through plain terrain all along the alignment. No portion of the road is located in the hilly area.
4.	Forest Area <i>(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest)</i>		√	Type of Vegetation: NA Legal Status of the Forest Area: <i>(Reserved, National Park, Sanctuaries, Unclassified, etc.)</i>
5.	Wildlife <i>(Explain whether there are any wildlife species in the project area)</i>		√	Name of animals: Not Applicable Endangered species (if any): Not Applicable
6.	Inhabited Area	√		The inhabited area located at- 0/000 to 0/100 and 0/900 to 1/300 Km.
7.	Agricultural Land	√		The agricultural land located in patches along road alignment at Ch. 0/100 to 0/600, 1/500 to 1/900 Km.
8.	Grazing grounds	√		Patches of Grazing ground exists along the Agricultural land on road alignment.



No	Type of Ecosystem	Yes	No	Explanation
9.	Barren Land	√		Barren land is located in patches at Ch. 1/900 to 2/000 Km.

**C. Specific description of the Road Environment (Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)**

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? <b>(If yes, indicate the location (right or left side) and the chainage)</b>		√	There are no areas with landslide or erosion problems along the road ( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? <b>(If yes, list them indicating the location (right or left side) and the chainage)</b>	√		Swamps are located near Ch. 0/300 to 0/600 Km. (RHS), 0/700 to 0/800 Km. (Both side)
3.	Are there any nallas/streams/rivers etc. along/crossing the road? <b>(If yes, list them indicating the location (right, left or crossing) and the chainage)</b>	√		Nalla crossing the road at Ch. 0/000 Km.
4.	Are there problems of water stagnation and other drainage issues on or near the road? <b>(If yes, mention chainage)</b>		√	There is no problem of water stagnation and other drainage issues on or near the road. However, community suggested for 8 CD works Ch. 0/350, 0/470, 0/750, 1/860, 580, 0/910, 1/350 and 1/920 Km. HP Culvert. ( √ ) No Secondary Information is available and Local Community is not aware of this matter.
5.	Is the area along the project road prone to flooding? <b>(If yes, mention flood level and frequency)</b>		√	No part of the road is prone to flood ( √ ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the centre line of the road alignment? <b>(If yes attach list of trees indicating the location (right or left side) and the chainage)</b>	√		There are trees existing on road alignment. Tree felling/alignment shifting required at Ch. 0/100 to 0/200 Km. , 1/200 to 1/300 , 1/300 to 1/400 Km.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? <b>(If yes, specify details of habitat with chainage)</b>		√	No such area ( √ ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		√	No such area ( √ ) No Secondary Information Available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
9.	Are there any utility structures <sup>18</sup> within 10 m on either side from the centre line of the road alignment? <i>(If yes, attach list with chainage)</i>	√		List attached.
10.	Are there any religious, cultural or community structures/buildings <sup>19</sup> within 10 m on either side from the centre line of the road alignment? <i>(If yes attach list with chainage)</i>	√		List attached.

#### D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.	√		Consultation with local community has been conducted .
2.	Any suggestion received in finalizing the alignment	√		Suggestion received and incorporated in the CPF and ECoP
3.	If suggestions received, were they incorporated into the design?	√		Suggestion received and incorporated in the CPF and ECoP document.

#### E. Please attach the following:

- 1) List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)
- 2)

Chainage	Number		Whether Cutting required	Chainage	Number		Whether Cutting required
	LHS	RHS			LHS	RHS	
000-100		2	No Cutting	900-1000	2	3	No Cutting
100-200	1	1	Tree cutting	1200-1300	4		Tree cutting
200-300		1	No Cutting	1300-1400	3		Tree cutting
700-800		1	No Cutting	1400-1500		1	No Cutting

- 3) List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	LHS	REMARK	RHS	REMARK
100-200	SS1	No Shifting		
200-300	EP1	No Shifting		
300-400	EP3	No Shifting		
400-500	EP2	No Shifting		
500-600	EP2	No Shifting		
700-800	SS1, EP1	No Shifting		
1100-1200			EP1	To be shifted
1200-1300			SS1	No Shifting

<sup>18</sup> Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures.

<sup>19</sup> Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures.

Chainage	LHS	REMARK	RHS	REMARK
1500-1600			EP1	To be shifted

- 4) List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

Chainage	LHS	RHS	Remark
1900-2000		School	Not affected

- 5) Sketch of strip map of the road covering details of at least 10 m on either side from the centre line of the road.

AREA	LHS		CH	RHS		AREA
Open Area			1900/ 2000			Open Area
	Culvert				School-1	
Open Area			1800/ 1900			Open Area
	Culvert					
Open Area			1700/ 1800			Open Area
	Curve					
Open Area			1600/ 1700			Open Area
Open Area			1500/ 1600		Electric pole-1	Open Area
Open Area			1400 to 1500		Curve	Open Area
	Tree-1					
	Curve					
Village Area	Culvert		1300 to 1400		Pond	Village Area
	Tree-3					
Village Area			1200 to 1300		Curve	Village Area
	Tree-4				Substation-1	
Village Area			1100 to 1200		T	Village Area
	Private house-3				Electric pole-1	
					Private house-2	
Village Area	Private house-3		1000 to 1100		Private house-4	Village Area
	Curve					

AREA	LHS	CH	RHS	AREA	AREA	LHS
Built-up Area	Curve		0/900 to 1/000		Culvert	Built-up Area
	Private house-3				Tree-3	
	Tree-2					
Open Area	Curve		0/800 to 0/900			Open Area
	Pond-1					
Open Area	Substation-1		0/700 to 0/800			Open Area
	Electric pole-1				Tree-1	
	Curve				Culvert	
Open Area			0/600 to 0/700			Open Area
Open Area			0/500 to 0/600			Open Area
	Electric Pole-2				Culvert	
Open Area	Curve		0/400 to 0/500			Open Area
	Electric pole-2				Culvert	
Open Area	Culvert		0/300 to 0/400			Open Area
	Electric pole-3					
Open Area			0/200 to 0/300		Curve	Open Area
	Electric pole-1				Tree-1	
Open Area	Substation-1		0/100 to 0/200			Open Area
	Tree-1				Tree-1	
Village Area			0/000 to 0/100		House-1	Village Area
	Private house-1				Tree-2	
	Y-junction					

6) **Photographs of the project area showing at least 10 m on either side from centre line of road alignment. Every 2 km or less of road must**



Ch.0/000 to 0/100 Km.



Ch.0/100 to 0/200 Km.



Ch.0/200 to 0/300 Km.



Ch.0/300 to 0/400 km.



Ch.0/400 to 0/500 Km.



Ch.0/500 to 0/600 Km.



Ch.0/600 to 0/700 Km.



Ch.0/700 to 0/800 Km.



Ch.0/800 to 0/900 Km.



Ch.0/900 to 1/000 Km.



Ch.1/000 to 1/100 Km.



Ch.1/100 to 1/200 Km.





Ch.1/200 to 1/300 Km.



Ch. 1/300 to 1/400 Km.



Ch. 1/400 to 1/500 Km.



Ch. 1/500 to 1/600 Km.





Ch.1/600 to 1/700 Km.



Ch.1/700 to 1/800 Km.



Ch.1/800 to 1/900 Km.



Ch.1/900 to 2/000 Km.



Ch.2/000 Km. – End of Road –  
School on the RHS



Transact walk in progress

## Appendix 3: Environmental features of roads within 10 m corridor

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
1	Balasore I	Nilgiri	Kansa- Kakudipal	2.50	No	No	11	0	2	0	0	0
2	Balasore I	Nilgiri	Telipal- Siarimal	1.50	No	No	8	1	0	0	0	0
3	Balasore I	Nilgiri	PWD - Khuntapaladiha	1.70	No	No	6	0	0	0	0	0
4	Balasore I	Nilgiri	PWD- Bholanal	3.03	No	No	26	0	0	0	0	0
5	Balasore I	Nilgiri	PWD- Sarupal	1.50	Yes	Apl	14	0	0	0	0	0
6	Balasore I	Oupada	PWD Road to Pinchhabania	4.30	No	No	8	1	3	0	0	0
7	Balasore I	Oupada	Dimichua - Harichandrapur	2.00	No	No	16	2	0	0	0	0
8	Balasore I	Remuna	Kuligaon - Gambharia	2.00	No	No	7	0	1	0	0	0
9	Balasore I	Remuna	Bhadrasahi- Gaudgaon	3.40	No	No	4	0	2	0	0	0
10	Balasore I	Basta	Kothia - Kuchuli	1.50	No	No	14	0	0	0	0	0
11	Balasore I	Balasore	NH 60 - Paramanandapur	3.00	No	No	2	0	0	0	0	0
12	Balasore I	Balasore	PWD Road- Kuradiha	2.00	No	No	19	9	2	0	0	0
13	Balasore I	Balasore	Salt Road- Dalsusa	2.00	No	No	10	0	2	0	0	0
14	Balasore I	Balasore	NH60 - Belbaria	3.00	No	No	18	0	3	0	0	0
14	Sub Total			33.43								
1	Balasore II	Bahanaga	R.D. road to Kaharagohiri	5.60	No	No	17	0	0	0	0	0
2	Balasore II	Simulia	Dadhibamanpur to Parameswarapur	3.50	No	No	24	0	0	0	0	0
3	Balasore II	Simulia	Astia to Biranchipur	5.40	No	No	11	0	0	0	0	0
4	Balasore II	Khaira	Chakradharpur (RD road) to Krushnadaspur	3.50	No	No	12	1	2	0	0	0
5	Balasore II	Khaira	Soro Kupari PWD Road to Arjunpur	0.70	No	No	7	0	0	0	0	0
6	Balasore II	Khaira	Tudigadia to Rafayatpur	5.50	No	No	9	0	0	0	0	0
7	Balasore II	Simulia	Bari to Tirukha	3.70	No	No	15	0	0	0	0	0
7	Sub Total			27.90								
1	Bhadrak I	Tihidi	Barsar to Madhupur	5.00	No	No	11	1	0	0	0	0
1	Sub Total			5.00								
1	Bhadrak II	Bhadrak	Asura to Trisalpur	4.50	No	No	16	2	7	0	0	0
2	Bhadrak II	Bhadrak	PWD Road to D S Bindha	3.00	No	No	18	0	2	0	0	0
3	Bhadrak II	B.Pokhari	Barahanuapada	3.00	No	No	14	0	0	0	0	0
4	Bhadrak II	B.Pokhari	T2 to Mudhapada	3.00	No	No	19	2	4	0	0	0
5	Bhadrak II	Dhamangar	PWD Road to Dinajpur	3.70	No	No	10	0	2	0	0	0
6	Bhadrak II	Dhamangar	PWD Road to Tarabantia	2.70	No	No	9	1	1	0	0	0
7	Bhadrak II	B.Pokhari	(A) T2 to Nawarangapur	2.50	No	No	6	0	0	0	0	0
8	Bhadrak II	B.Pokhari	(B) T2 to Surubana	3.20	No	No	2	0	0	0	0	0
9	Bhadrak II	B.Pokhari	T1 to Sarapada	4.90	No	No	24	0	1	0	0	0
10	Bhadrak II	B.Pokhari	T3 to Bankamuhana	4.80	No	No	7	1	2	0	1	0
11	Bhadrak II	Chandabali	T3 to Pithiasenda	5.50	No	No	5	0	0	0	0	0
12	Bhadrak II	Basudavpur	PWD Road to Mishrapur	4.00	No	No	5	0	1	0	0	0
13	Bhadrak II	Basudavpur	(A) L42 to Kuali	5.50	No	No	21	2	8	0	0	0
14	Bhadrak II	Basudavpur	(B) T2 to Purusotampur	1.50	No	No	13	0	2	0	1	1
15	Bhadrak II	Basudavpur	PWD Road to Samia	1.50	No	No	14	0	0	0	0	0
16	Bhadrak II	Basudavpur	Eram Road to Olagada	6.50	No	No	19	2	1	4	0	1
17	Bhadrak II	Chandabali	Chardiha to Rajendrapalli	3.20	No	No	5	0	0	0	0	0
18	Bhadrak II	Chandabali	T6 to Kandisahi	2.20	No	No	7	0	0	0	0	0
19	Bhadrak II	B.POKHARI	T-1 to Uttarbad	4.00	No	No	17	1	3	0	0	0
20	Bhadrak II	Chandabali	Dosinga to Oramal	4.00	No	No	10	0	0	0	0	0
21	Bhadrak II	Basudavpur	PWD Road to Jignipur	4.00	No	No	5	0	0	0	0	0
22	Bhadrak II	Basudavpur	PWD Road to Bhoisahi	4.70	No	No	10	0	4	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
22	Sub Total			81.90								
1	Bolangir	Aglapur	RD road to Amarmunda (Road-A)	2.00	No	No	35	0	0	0	0	0
2	Bolangir	Aglapur	RD road to Pudapadar (Road-B)	3.33	No	No	29	0	0	0	0	0
3	Bolangir	Aglapur	N.H.-201 to Danipali (Road-C)	2.00	No	No	27	0	0	0	0	0
4	Bolangir	Aglapur	RD road to Pandkital (Road-D)	1.41	No	No	11	0	0	0	0	0
5	Bolangir	Belpada	RD Road to Daramunda (Road-A)	3.25	No	No	21	0	0	0	0	0
6	Bolangir	Belpada	RD Road to Sunabahali (Road-B)	2.13	No	No	32	0	0	0	0	0
7	Bolangir	Bolangir	RD Road to Ramsingha (Road-A)	1.25	No	No	29	0	0	0	0	0
8	Bolangir	Bolangir	Baxiundar to Dhobaudar (Road-B)	2.50	No	No	33	0	0	0	0	0
9	Bolangir	Bolangir	Mayabarah to Uchhabahal (Road-C)	3.25	No	No	35	0	0	0	0	0
10	Bolangir	Bolangir	SH-42 to Bedtenlenpali (Road-A)	3.33	No	No	24	0	0	0	0	0
11	Bolangir	Bolangir	SH-42 to Khagsabahali (Road-B)	3.50	No	No	28	0	0	0	0	0
12	Bolangir	Bolangir	Bhudimuhan to Santenpali (Road-c)	2.30	Yes	No	31	0	0	0	0	0
13	Bolangir	Deogaon	PWD Road to Jamjharan	4.50	No	No	53	0	0	0	0	0
14	Bolangir	Gudvella	Dungibahal to Mandapala	5.20	No	No	24	0	0	0	0	0
15	Bolangir	Gudvella	P.S Road to Sindurbahali	1.30	No	No	49	0	0	0	0	0
16	Bolangir	Khaprakhol	Nandupala to Tumbipadar	2.30	No	No	53	0	0	0	0	0
17	Bolangir	Khaprakhol	Bhaludunguri to Karlakutna(Road-B)	4.20	No	No	50	0	0	0	0	0
18	Bolangir	Khaprakhol	Kariamal to Dudukipadar(Road-A)	2.30	No	No	35	0	0	0	0	0
19	Bolangir	Khaprakhol	RD Road to Ambapali(Road-B)	3.60	No	No	39	0	0	0	0	0
20	Bolangir	Khaprakhol	RD Road to Brahmani(Road-A)	2.40	No	No	37	0	0	0	0	0
21	Bolangir	Loisingha	NH-201 to Banjhipali (Road-A)	1.50	No	No	29	0	0	0	0	0
22	Bolangir	Loisingha	NH-201 to Karliput (Road-B)	2.00	No	No	35	0	0	0	0	0
23	Bolangir	Loisingha	RD road to Unchhabahali (Road-C)	3.00	No	No	29	0	0	0	0	0
24	Bolangir	Patnagarh	PWD Road to Kanheital	4.60	No	No	27	0	0	0	0	0
25	Bolangir	Patnagarh	PS Road to Kerbeda (Road-A)	1.45	No	No	25	0	0	0	0	0
26	Bolangir	Patnagarh	RD Road to Mandamahali (Road-B)	1.65	No	No	22	0	0	0	0	0
27	Bolangir	Patnagarh	RD Road to Bijamugar (Road-C)	1.00	No	No	38	0	0	0	0	0
28	Bolangir	Patnagarh	PS Road to Babejore (Road-D)	2.55	No	No	42	0	0	0	0	0
29	Bolangir	Puintal	NH-201 to Padiabahali (Road-A)	3.00	No	No	22	0	0	0	0	0
30	Bolangir	Puintal	RD Road to Khamarmunda (Road-B)	1.00	No	No	7	0	1	0	0	0
31	Bolangir	Puintal	Jamgaon RD to Kasurpali	1.50	No	No	28	0	1	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
			(Road-C)									
32	Bolangir	Saintala	RD Road to Biratkani	1.00	No	No	27	0	1	0	0	0
33	Bolangir	Saintala	RD Road to Bhatasar	1.10	No	No	26	0	1	0	0	0
34	Bolangir	Saintala	TD RD Road to Jurabandha	0.78	No	No	22	0	1	0	0	0
35	Bolangir	Agalpur	RD Road to Gandpali	3.00	No	No	42	0	1	0	0	0
36	Bolangir	Khaprakhol	PWD Road to Bendra	8.30	No	No	92	0	1	0	0	0
37	Bolangir	Saintala	Tikrapada RD Road to Dukelcharchar	2.60	No	No	46	0	1	0	0	0
38	Bolangir	Puintala	SH-14 to Bhalbuka	2.75	No	No	27	0	1	0	0	0
39	Bolangir	Patnagarh	Khuntsamalei to Daitarymunda	2.20	No	No	29	0	1	0	0	0
<b>39</b>	<b>Sub Total</b>			<b>101.03</b>								
1	Titlagarh	Muribahal	Sargul to Bayaudar	1.60	No	No	25	0	0	0	0	0
2	Titlagarh	Muribahal	Chanabahal chhak to Ledapadar	2.70	Yes	No	63	0	0	0	0	0
3	Titlagarh	Muribahal	Tentulikhunti to Karlapitha	3.10	Yes	No	29	0	0	0	0	0
4	Titlagarh	Muribahal	Jamkani to Limpara	1.20	No	No	35	0	0	0	0	0
5	Titlagarh	Muribahal	Asurmunda Chhak to Dudukapada	2.00	No	No	42	0	0	0	0	0
6	Titlagarh	Muribahal	Bijighat to Makhapali via: Sahajpani	1.80	No	No	29	0	0	0	0	0
7	Titlagarh	Muribahal	RD Road to Bijighat	4.30	No	No	52	0	0	0	0	0
8	Titlagarh	Muribahal	Dumerpada to Barajuri	3.00	No	No	27	0	0	0	0	0
9	Titlagarh	Muribahal	Singhpali to Siletpara	2.10	Yes	No	31	0	0	0	0	0
10	Titlagarh	Bangomunda	RD Road to Balkhamar	2.70	Yes	No	29	0	0	0	0	0
11	Titlagarh	Bangomunda	Themera to Utkela	2.05	Yes	No	20	0	0	0	0	0
12	Titlagarh	Bangomunda	PWD Road to Sahajot	4.60	Yes	No	56	0	0	0	0	0
13	Titlagarh	Bangomunda	RD Road to Bahalpadar	4.40	No	No	62	0	0	0	0	0
14	Titlagarh	Bangomunda	Barlabahali to Baldha	1.60	Yes	No	86	0	0	0	0	0
15	Titlagarh	Bangomunda	RD Road to Chandaguda	1.50	No	No	39	0	0	0	0	0
16	Titlagarh	Bangomunda	Khujenbahal to Dangia	2.40	Yes	No	37	0	0	0	0	0
17	Titlagarh	Bangomunda	Dangia to Bagbahal	2.40	Yes	No	54	0	0	0	0	0
18	Titlagarh	Bangomunda	Khira to Deogaon	5.00	Yes	No	69	0	0	0	0	0
19	Titlagarh	Bangomunda	Pipalmunda to Telipadar	1.80	No	No	28	0	0	0	0	0
20	Titlagarh	Bangomunda	SH-16 to Gharla	1.85	No	No	35	0	0	0	0	0
21	Titlagarh	Titilagarh	MDR-40 to Thalka	2.22	No	No	58	1	0	0	0	0
22	Titlagarh	Titilagarh	NH-217 to Belpada	1.80	No	No	46	0	0	0	0	0
23	Titlagarh	Titilagarh	Titilagarh-Ghadar to Chitalal	2.20	No	No	35	0	0	0	0	0
24	Titlagarh	Titilagarh	Sireikela-Goudtola RD Road to Goidabari	0.60	Yes	No	32	0	0	0	0	0
25	Titlagarh	Titilagarh	SH-16 to Shukhunabhata	1.10	No	No	28	0	0	0	0	0
26	Titlagarh	Titilagarh	SH-16 to Kanderla	1.00	No	No	22	0	0	0	0	0
27	Titlagarh	Titilagarh	MDR to Badpatprapali	4.20	No	No	45	0	0	0	0	0
28	Titlagarh	Titilagarh	L-89 to Beherapada	0.90	No	No	12	0	0	0	0	0
29	Titlagarh	Tureikela	Ramod to Mahanilaha	3.50	No	No	52	0	0	0	0	0
30	Titlagarh	Tureikela	Salepada to Patimal	3.00	No	No	62	0	0	0	0	0
31	Titlagarh	Tureikela	Mandla to Kameimunda	2.30	Yes	No	72	0	0	0	0	0
32	Titlagarh	Tureikela	Dabri to Kandupada	1.80	No	No	21	0	0	0	0	0
33	Titlagarh	Tureikela	PWD Road to Bagbahal	2.30	No	No	28	0	0	0	0	0
34	Titlagarh	Tureikela	Nandol to Bharuakani	5.50	No	No	35	0	0	0	0	0
35	Titlagarh	Tureikela	PWD Road to Halanbhata	7.40	No	No	102	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
36	Titlagarh	Tureikela	Badadakla to Nagaphena	2.20	Yes	No	98	0	0	0	0	0
37	Titlagarh	Tureikela	Dholmandal to Gabahara	2.80	No	No	12	0	0	0	0	0
38	Titlagarh	Muribahal	Janipara to Nuapada	2.00	No	No	56	0	0	0	0	0
39	Titlagarh	Muribahal	Dejuri to Padhanmundi	4.50	No	No	42	0	0	0	0	0
40	Titlagarh	Tureikela	RD Road to Simanbahal	1.30	No	No	75	0	0	0	0	0
41	Titlagarh	Tureikela	Khujen to Bandhanpali	2.00	No	No	25	0	0	0	0	0
<b>41</b>	<b>Sub Total</b>			<b>106.72</b>								
1	Cuttack I	Cuttack Sadar	Paikasahi(Nurpatna) to Chanchapada	5.00	No	No	25	0	0	0	0	0
2	Cuttack I	Cuttack Sadar	Paikasahi(Nurpatna) to Chanchapada	5.73	No	No	35	0	0	0	0	0
3	Cuttack I	Mahanga	Balipada to Dihigop(0/0 Km to 0/4000Km)	4.00	No	No	21	0	0	0	0	0
4	Cuttack I	Mahanga	Balipada to Dihigop(4/000 Km to 9/900Km)	5.90	No	No	26	0	0	0	0	0
5	Cuttack I	Mahanga	Balipada to Dihigop(9/900 Km to 15/200Km)	5.30	No	No	18	0	0	0	0	0
6	Cuttack I	Cuttack Sadar	Bhoipada to Sadhusahi	6.94	No	No	27	0	0	0	0	0
7	Cuttack I	Cuttack Sadar	Bhoipada to Sadhusahi	4.08	No	No	52	0	0	0	0	0
8	Cuttack I	Nischintakoili	Kulia to San Routpati	4.87	No	No	24	0	0	0	0	0
9	Cuttack I	Nischintakoili	Kulia to San Routpati	3.22	No	No	19	0	2	0	0	0
10	Cuttack I	Nischintakoili	Kulia to San Routpati	6.32	No	No	29	0	0	0	0	0
<b>10</b>	<b>Sub Total</b>			<b>51.34</b>								
1	Cuttack II	Narsinghpur	Nuagarh to Bhuska	3.80	Yes	Apl	179	0	0	0	0	0
2	Cuttack II	Baramba	Badakambilo to Chhanchunia	9.00	No	No	53	0	0	0	0	0
<b>2</b>	<b>Sub Total</b>			<b>12.80</b>								0
1	Deogarh	Reamal	Gadiapal to Thianal	4.05	Yes	Apl	54	0	0	0	0	0
2	Deogarh	Reamal	NH 200 to Panchamahala	2.20	No	No	32	0	0	0	0	0
3	Deogarh	Reamal	N.H.200 Rangamatia ( Kadalipal)	9.93	No	No	26	0	0	0	0	0
4	Deogarh	Reamal	Mahasindhu to Chhachupali	6.09	No	No	20	0	0	0	0	0
5	Deogarh	Tileibani	Jharagogua to Raital	4.50	No	No	41	0	0	0	0	0
6	Deogarh	Tileibani	Parposi to Tasarada	5.00	Yes	Apl	135	0	0	0	0	0
7	Deogarh	Tileibani	Jamunali to Manjaribahal	2.20	No	No	17	0	0	0	0	0
8	Deogarh	Barkote	Jharabahal to Netrabahal	2.70	No	No	18	0	0	0	0	0
9	Deogarh	Barkote	Saida to Rugudakudar	5.45	No	No	35	0	0	0	0	0
10	Deogarh	Barkote	Rugudakudar to Pacheripani	5.10	No	No	85	5	0	0	0	0
11	Deogarh	Tileibani	Bhaluguha to Surupa	3.10	Yes	Apl	76	0	0	0	0	0
<b>11</b>	<b>Sub Total</b>			<b>50.32</b>								
1	Ganjam I	Beguniapada	Janibili to PWD road	9.10	No	No	96	0	0	0	0	0
2	Ganjam I	Beguniapada	Kalimeghi to Luhakote	6.00	No	No	26	0	0	0	0	0
3	Ganjam I	Sorada	Nuagam to Binjigiri	4.10	No	No	76	0	0	0	0	0
4	Ganjam I	Sorada	Sunakhandi to Sandhipiplapanka	2.50	No	No	106	0	1	0	0	0
5	Ganjam I	Bellaguntha	PWD Road to Raipada	1.98	No	No	46	0	0	0	0	0
6	Ganjam I	Bellaguntha	SH-7 to Ambadeuli	1.48	No	No	51	0	0	0	0	0
7	Ganjam I	Bellaguntha	RD Road to Saranuapalli	7.00	No	No	56	0	0	0	0	0
8	Ganjam I	Bhanjanagar	PWD Road to Boribandha	2.00	No	No	10	0	0	0	0	0
9	Ganjam I	Sorada	RD Road (Mayangi) to	13.20	No	No	255	8	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
			Dhepapalli									
10	Ganjam I	Jagannath prasad	Balakari to Gundribadi	2.50	No	No	47	0	0	0	0	0
11	Ganjam I	Jagannath prasad	SH-21 to Tikarapalli	1.20	No	No	55	0	0	0	0	0
12	Ganjam I	Jagannath prasad	Haridapadar to Chudakhai	3.80	No	No	58	0	0	0	0	0
13	Ganjam I	Sorada	Goudagotha to Kurubandha	7.20	Yes	Apl	78	0	0	0	0	0
14	Ganjam I	Sorada	B.Kotibadi to Petaguda	3.50	No	No	22	0	0	0	0	0
15	Ganjam I	Sorada	Perju to Muliapalli	1.50	No	No	45	0	0	0	0	0
16	Ganjam I	Sorada	Perju to Hatiguda	1.50	No	No	76	0	0	0	0	0
17	Ganjam I	Bhanjanagar	Dhumakumpa to Akhupadar	3.80	No	No	49	2	0	0	0	0
18	Ganjam I	Bhanjanagar	Daha to Gudiapadar	3.00	No	No	22	0	0	0	0	0
19	Ganjam I	Sorada	PWD Road to Ragada	10.20	No	No	56	0	0	0	0	0
20	Ganjam I	Bhanjanagar	PWD Road to Kanabindha	8.50	Yes	NR	56	0	0	0	0	0
21	Ganjam I	Sorada	Sarapanka to Kalama	1.30	No	No	62	0	0	0	0	0
22	Ganjam I	Sorada	Dulada (022) to Gochapalli	2.00	No	No	82	0	0	0	0	0
23	Ganjam I	Bhanjanagar	RD Road to Rambhapalli	6.00	No	No	96	0	0	0	0	0
24	Ganjam I	Bhanjanagar	Kathachira to Kumbhipalli	5.00	No	No	99	0	0	0	0	0
25	Ganjam I	Bhanjanagar	Durgaprasad Chhak to Ulungia	12.96	Yes	Apl	149	0	0	0	0	0
26	Ganjam I	Dharakote	Manikyapur to Maradi	3.80	No	No	120	0	0	0	0	0
27	Ganjam I	Dharakote	MDR - 64 to JN Pur	2.60	No	No	99	0	0	0	0	0
28	Ganjam I	Aska	Pathara to Gabanala Sarapanka road to Kalama	8.50	No	No	46	0	0	0	0	0
29	Ganjam I	Dharakote	MDR - 64 to Lalitpur	1.80	No	No	42	0	0	0	0	0
30	Ganjam I	Dharakote	Kangidi to Adibandha	1.80	No	No	7	0	0	0	0	0
31	Ganjam I	Dharakote	RD Road to Gopalpur	3.50	No	No	29	0	0	0	0	0
32	Ganjam I	Polosara	Banthapalli to Muktamaladeipur road	3.10	No	No	76	0	0	0	0	0
33	Ganjam I	Buguda	Pokasunga Jn. to Bellaguma Badakhola	1.85	Yes	Apl	32	0	0	0	0	0
34	Ganjam I	Buguda	Samalai to Dhimirisahi road	1.88	No	No	25	0	0	0	0	0
35	Ganjam I	Polosara	R.D road to Bhitrakhola	2.25	Yes	Apl	52	0	0	0	0	0
36	Ganjam I	Buguda	Khadalapalli to Pokasunga	4.00	Yes	Apl	78	0	0	0	0	0
37	Ganjam I	Polosara	Mathura road to Dhaumala (Hatipadapalli)	4.20	No	No	76	0	0	0	0	0
38	Ganjam I	Dharakote	RD Road to Sarapada	6.70	No	No	56	0	0	0	0	49
39	Ganjam I	Buguda	Hadichira to Badatanda	6.50	No	No	98	0	0	0	0	0
<b>39</b>	<b>Sub Total</b>			<b>173.80</b>								
1	Ganjam II	Chatrapur	Chikalakhandi to Jharapokhari	3.50	No	No	65	0	0	0	0	0
2	Ganjam II	Digapahandi	PWD road to Gunthapada	4.80	No	No	78	0	0	0	0	0
3	Ganjam II	Digapahandi	PWD road to Kukutabandha to Narayanpur	2.30	No	No	15	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
4	Ganjam II	Digapahandi	PWD road to Ramachandapur	4.30	No	No	10	0	0	0	0	0
5	Ganjam II	Digapahandi	PS road to Sindhaba to Syamasundarpalli	2.80	No	No	63	0	0	0	0	0
6	Ganjam II	Digapahandi	RD road to Nimakhandipentha to Baiganabadi	8.20	No	No	12	0	0	0	0	0
7	Ganjam II	K.S.Nagar	PWD road to Ratnapur	2.50	No	No	46	0	0	0	0	0
8	Ganjam II	K.S.Nagar	Duhanapalli to Mohanapalli road	2.00	No	No	15	0	0	0	0	0
9	Ganjam II	Khallikote	Badapalli to Badabola	2.20	Yes	Apl	46	0	0	0	0	0
10	Ganjam II	Khallikote	Badapalli to Chakasingi	2.80	Yes	Apl	63	0	0	0	0	0
11	Ganjam II	Khallikote	RD road to Haripur	6.60	No	No	12	0	0	0	0	0
12	Ganjam II	Khallikote	Biripur to Raipada	3.20	No	No	46	0	0	0	0	0
13	Ganjam II	Kukudakhandi	PWD road to Ramadhia	11.10	Yes	Apl	98	0	0	0	0	0
14	Ganjam II	Patrapur	RD road to Parvatipur	4.00	No	No	55	0	0	0	0	0
15	Ganjam II	Patrapur	PWD road to Daleswar	2.00	No	No	65	0	0	0	0	0
16	Ganjam II	Patrapur	PWD road to Budagada	2.51	No	No	12	0	0	0	0	0
17	Ganjam II	Patrapur	PWD road to Patrapur to Mukundapur	5.50	No	No	78	0	0	0	0	0
18	Ganjam II	Sanakhemundi	PWD road to Nunilathi to Khairapadar	3.95	No	No	86	0	0	0	0	0
19	Ganjam II	Sanakhemundi	SH-17 to Podamari to Buguda	12.16	No	No	42	0	0	0	0	0
20	Ganjam II	Sheragada	SH-29 to Nuapalli	1.50	No	No	39	0	0	0	0	0
21	Ganjam II	Sheragada	SH-36 to L.N.Pur	2.00	No	No	35	0	0	0	0	0
22	Ganjam II	Sheragada	SH-36 to P Karadakana	1.50	No	No	25	0	0	0	0	0
23	Ganjam II	Patrapur	RD road to Buratal	7.50	Yes	NR	32	0	0	0	0	Ye
24	Ganjam II	Patrapur	PWD road to Ankuli (GP) Reach-I from 0/0 to 11/60	11.60	Yes	NR	26	0	0	0	0	0
25	Ganjam II	Patrapur	PWD road to Ankuli (GP) Reach-II from 11/60 to 32/900	21.30	Yes	NR	28	0	0	0	0	0
26	Ganjam II	Rangeilunda	NH-5 to Mishrapalli	1.60	No	No	35	0	0	0	0	0
27	Ganjam II	Digapahandi	RD road to Narendraballi	0.70	No	No	36	0	0	0	0	0
27	<b>Sub Total</b>			<b>134.11</b>								
1	Jagatsinghpur	Balikuda	Nuagaon to Samantarapur	2.50	No	No	10	2	2	0	0	0
2	Jagatsinghpur	Tirtol	Badjanga to Rankei	2.70	No	No	43	1	0	0	0	0
3	Jagatsinghpur	Biridi	Basandra to Bambilo	4.70	No	No	12	1	0	0	0	0
4	Jagatsinghpur	Tirtol	K.N.Pur to Itatikiri	3.35	No	No	7	0	0	0	0	0
5	Jagatsinghpur	Erasama	Kujanga Noliassahi RD Road - Janardhanpur	1.30	No	No	21	0	2	0	0	0
6	Jagatsinghpur	Balikuda	Santho to Alikanta	2.30	No	No	5	0	0	0	0	0
7	Jagatsinghpur	Naugaon	Arakhakud to Harisapur	5.00	No	No	14	0	2	0	0	0
8	Jagatsinghpur	Erasama	Erasama Chatua RD Road (Deika) to Dhobei	3.00	No	No	8	2	3	0	0	0
9	Jagatsinghpur	Tirtol	PWD Road 2nd km to Hazipur	2.50	No	No	9	0	0	0	0	0
10	Jagatsinghpur	Tirtol	Nuapokhari to Dhunpur	10.10	No	No	17	0	3	0	0	0
11	Jagatsinghpur	Balikuda	Kulanpur to Daraba	2.50	No	No	11	0	0	0	0	0
12	Jagatsinghpur	Tirtol	Nuapokhari to Dianpur	1.70	No	No	30	0	0	0	0	0
13	Jagatsinghpur	Balikuda	Rahana to Prasanpur	2.70	No	No	4	0	0	0	1	0
14	Jagatsinghpur	Balikuda	Jaganathpur to Khaleri	2.50	No	No	7	0	0	0	0	0
15	Jagatsinghpur	Tirtol	Bisanpur to Nirapoi	2.25	No	No	3	0	3	0	0	0
16	Jagatsinghpur	Balikuda	Naharana to Sunadhar	6.70	No	No	5	0	1	0	0	0



SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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17	Jagatsinghpur	Erasama	Khatikolda to Ganeswarpur	4.00	No	No	6	0	0	0	0	0
<b>17</b>	<b>Sub Total</b>			<b>59.80</b>								
1	Jajpur I	Dasarathpur	Kayan to Ichhapur	6.32	No	No	17	0	0	0	0	0
2	Jajpur I	Korei	N.H.- 5A to Badatrilochanpur	0.75	No	No	10	0	3	0	0	0
3	Jajpur I	Korei	R.D. Road to Nuagada	3.00	No	No	7	0	0	0	0	0
4	Jajpur I	Binjharpur	RD Road to Andhalo	7.50	No	No	34	0	0	0	0	0
5	Jajpur I	Dasarathpur	P.W.D. Road to Sidheswarpur	5.00	No	No	17	0	0	0	0	0
6	Jajpur I	Sukinda	RD Road to Arjunajhar	5.00	No	No	28	0	0	0	0	0
7	Jajpur I	Korei	Rampur Sagadi to Bengamadharpur	1.35	No	No	7	0	0	0	0	0
8	Jajpur I	Dasarathpur	PWD Road to Sanadogada	6.00	No	No	26	0	0	0	0	0
9	Jajpur I	Dasarathpur	R.D. Road to Jundupur	7.55	No	No	31	0	0	0	0	0
10	Jajpur I	Danagadi	Expressway to Jandapal	1.95	No	No	42	0	0	0	0	0
<b>10</b>	<b>Sub Total</b>			<b>44.42</b>								0
1	Jajpur II	Dharmasala	R & B road to Krushnaposi	2.35	No	No	42	0	0	0	0	0
2	Jajpur II	Dharmasala	RD road Madhusudanpur to Tarasha	3.00	No	No	36	0	0	0	0	0
3	Jajpur II	Dharmasala	Bajabati to Khunta	2.95	No	No	7	0	2	0	0	0
4	Jajpur II	Dharmasala	R & B road to Majhipatna	2.85	No	No	93	0	0	0	0	0
<b>4</b>	<b>Sub Total</b>			<b>11.15</b>								
1	Dharmagarh	Dharmagarh	P.W.D. Road to Budhimunda	3.30	No	No	55	0	0	0	0	0
2	Dharmagarh	Dharmagarh	Palaspani to Beheraguda (Road - A)	3.00	No	No	74	0	0	0	0	0
3	Dharmagarh	Dharmagarh	P.S. Road to Hatipakhan (Road - B)	3.36	No	No	27	0	1	0	0	0
4	Dharmagarh	Dharmagarh	R.D. ROAD TO Bankimunda (Road - A)	3.21	Yes	No	26	0	0	0	0	0
5	Dharmagarh	Dharmagarh	R.D. Road to Palsapada (Road - B)	2.10	No	No	26	0	0	0	0	0
6	Dharmagarh	Dharmagarh	R.D. Road to Ravanguda (Road - A)	1.83	No	No	35	0	0	0	0	0
7	Dharmagarh	Koksara	Khuntia to Pipalpada (Road - B)	2.60	Yes	No	28	0	0	0	0	0
8	Dharmagarh	Kalampur	P.W.D. Road to Goud Kenduguda	2.50	No	No	46	0	0	0	0	0
9	Dharmagarh	Kalampur	Bijmara to Dumermunda	2.50	Yes	No	51	0	0	0	0	0
10	Dharmagarh	Kalampur	Karmel to Dongriguda (Road - A)	1.29	No	No	56	0	0	0	0	0
11	Dharmagarh	Kalampur	Bodelbandha to Tutraguda (Road - B)	2.10	No	No	38	0	0	0	0	0
12	Dharmagarh	Jaipatna	R.D. Road to Gopalpur (Road - A)	5.04	No	No	40	0	0	0	0	0
13	Dharmagarh	Jaipatna	P.S. Road to Ghumapada (Road - B)	3.03	No	No	47	0	0	0	0	0
14	Dharmagarh	Jaipatna	R.D. Road to Bastiguda	4.65	No	No	55	0	0	0	0	0
15	Dharmagarh	Jaipatna	R.D. Road to Sagjhore	5.01	No	No	58	0	0	0	0	0
16	Dharmagarh	Koksara	Dahagaon To Jharabandha (Road - A)	3.60	Yes	No	78	0	0	0	0	0
17	Dharmagarh	Koksara	Dahagaon To Gitikapadar (Road - B)	1.30	Yes	No	22	0	0	0	0	0
18	Dharmagarh	Koksara	Siuni Nh-201 To Tikrapada	2.91	Yes	No	45	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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19	Dharmagarh	Koksara	Gotamunda R.D. Road To Kanakpur	4.50	Yes	No	76	0	0	0	0	0
20	Dharmagarh	Koksara	T05 To Jampada	2.04	Yes	No	52	0	0	0	0	0
21	Dharmagarh	Koksara	Pipaljhappar To Gotamunda (Road - A)	2.25	Yes	No	22	0	0	0	0	0
22	Dharmagarh	Koksara	Bhursaguda To Malpada (Road - B)	2.00	Yes	No	19	0	0	0	0	0
23	Dharmagarh	Koksara	Soniapada To Ladugaon	6.03	Yes	No	48	0	0	0	0	0
24	Dharmagarh	Koksara	Ampani To Kar lakhutiapada	4.80	Yes	No	45	0	0	0	0	0
25	Dharmagarh	Jaipatna	P.W.D. Road To Kuhuriguma	5.25	No	No	78	0	0	0	0	0
26	Dharmagarh	Jaipatna	Lakhabahali To Jamchuan	5.45	No	No	55	0	0	0	0	0
27	Dharmagarh	Golamunda	R.D. Road To Ramchandrapur (Road - A)	1.50	Yes	No	51	0	0	0	0	0
28	Dharmagarh	Golamunda	R.D. Road To Sanjiful Juba (Road - B)	3.95	Yes	No	56	0	0	0	0	0
29	Dharmagarh	Golamunda	Sancherigaon To Jhamjharan (Part - I)	9.09	Yes	No	201	0	0	0	0	0
30	Dharmagarh	Golamunda	Sancherigaon To Jhamjharan (Part - II)	6.06	Yes	No	35	0	0	0	0	0
31	Dharmagarh	Dharmagarh	P.W.D. Road To Bhimkhojpada	3.00	No	No	46	0	0	0	0	0
<b>31</b>	<b>Sub Total</b>			<b>109.25</b>								
1	Kendrapara II	Aul	Tunga To Boulajodi	5.45	No	No	105	0	0	0	0	0
2	Kendrapara II	Rajnagar	Hansina To Chakamanipur	12.00	No	No	220	0	0	0	0	0
3	Kendrapara II	Rajnagar	R&B Road To Silapokhari	10.50	No	No	156	0	0	0	0	0
4	Kendrapara II	Pattamundai	Alapua To Nandalalpatna	2.00	No	No	75	0	0	0	0	0
5	Kendrapara II	Rajkanika	P.W.D. Road To Badataila	5.90	No	No	96	0	0	0	0	0
6	Kendrapara II	Rajnagar	Santhapada To Chakibanka Road	8.00	No	No	180	0	0	0	0	0
7	Kendrapara II	Pattamundai	Vedisahi To Banto Road	3.00	No	No	48	0	0	0	0	0
8	Kendrapara II	Rajkanika	Irrigation Embankment To Madhupada	4.65	No	No	62	0	0	0	0	0
9	Kendrapara II	Rajkanika	R.D. Road To Gharabhanjahola	6.10	No	No	75	0	0	0	0	0
10	Kendrapara II	Aul	R.D. Road To Beta	2.60	No	No	46	0	0	0	0	0
11	Kendrapara II	Rajkanika	R.D. Road To Bajpur	2.00	No	No	41	0	0	0	0	0
12	Kendrapara II	Aul	R.D. Road To Padanipal	5.16	No	No	88	0	0	0	0	0
13	Kendrapara II	Pattamundai	Mangarajpur To Deuli	4.10	No	No	78	0	0	0	0	0
14	Kendrapara II	Rajnagar	Mahulia To Pokharia Road	2.50	No	No	71	0	0	0	0	0
15	Kendrapara II	Aul	Brahmani Ghat To Nalapahi Road	2.52	No	No	45	0	0	0	0	0
<b>15</b>	<b>Sub Total</b>			<b>76.48</b>								
1	Keonjhar I	Keonjhar	N.H.215 to Badudighar Road	3.02	No	No	45	0	0	0	0	0
2	Keonjhar I	Keonjhar	Khajuripani-Kumudabahal road	2.82	Yes	Apl	226	0	0	0	0	0
3	Keonjhar I	Keonjhar	Haladharpur to Dudurapal road	4.02	No	No	62	0	0	0	0	0
4	Keonjhar I	Keonjhar	P.W.D. Road to Ramachandrapur road	1.86	No	No	32	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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5	Keonjhar I	Keonjhar	Manoharpur to Banamalipur road	1.85	No	No	36	0	0	0	0	0
6	Keonjhar I	Keonjhar	Patung to Amunipur road	1.62	No	No	27	0	0	0	0	0
7	Keonjhar I	Keonjhar	N.H.6 to Mahuldiha road	2.85	No	No	51	0	0	0	0	0
8	Keonjhar I	Keonjhar	N.H.215 to Jamunalia road	2.25	No	No	46	0	0	0	0	0
9	Keonjhar I	Keonjhar	Kusumita to Upper Kampdihi road	3.85	Yes	Apl	62	0	0	0	0	0
10	Keonjhar I	Keonjhar	Potala to Biswanathpur	2.40	No	No	29	0	0	0	0	0
11	Keonjhar I	Keonjhar	Tangarani(Belaposi)-Mathuramandali	3.25	No	No	56	0	0	0	0	0
12	Keonjhar I	Jhumpura	P.W.D. road to Gidhibas road	2.13	Yes	Apl	62	0	0	0	0	0
13	Keonjhar I	Saharpada	Jamuda to Arjunposi road	2.50	Yes	Apl	82	0	0	0	0	0
14	Keonjhar I	Saharpada	Purunapani to Talapada road	4.10	Yes	Apl	96	0	0	0	0	0
15	Keonjhar I	Saharpada	Gurandijodi to Badabaliposi road	6.60	Yes	Apl	92	2	8	0	0	0
16	Keonjhar I	Saharpada	R.D.Road (Phulpahadi) to Purunapani road	3.30	Yes	Apl	58	0	0	0	0	0
17	Keonjhar I	Saharpada	Tendra to Hariharpur road	5.50	Yes	Apl	45	0	0	0	0	0
18	Keonjhar I	Saharpada	Bilabaliposi road to Mangalpur road	4.00	Yes	Apl	61	0	0	0	0	0
19	Keonjhar I	Saharpada	Padiaposi to Deulaposi road	3.50	Yes	Apl	46	0	0	0	0	0
20	Keonjhar I	Saharpada	R.D. Road to Bhagabil road	2.00	Yes	Apl	42	0	0	0	0	0
21	Keonjhar I	Saharpada	N.Jagannathapur to Hinjalgadia road	4.10	Yes	Apl	44	4	0	0	0	0
22	Keonjhar I	Ghatgaon	Binida-Fuljhar road	2.87	No	No	29	0	0	0	0	0
23	Keonjhar I	Ghatgaon	Ramamchandapur-Ghuntijhari road	3.63	No	No	42	0	0	0	0	0
24	Keonjhar I	Ghatgaon	Mutapur to Bhagaghar road	5.05	No	No	53	0	0	0	0	0
25	Keonjhar I	Ghatgaon	R.D.Road Asanbani road	4.76	No	No	46	0	0	0	0	0
26	Keonjhar I	Patna	Putugaon to Tentulikhunti road	2.20	No	No	45	0	0	0	0	0
27	Keonjhar I	Patna	Bhalupahadi to Kimirdaposi road	3.00	Yes	Apl	39	0	0	0	0	0
28	Keonjhar I	Patna	P.W.D. Road to Analadiha road	2.79	No	No	40	0	0	0	0	0
29	Keonjhar I	Patna	R.D. Road to padampur road	2.82	No	No	54	0	0	0	0	0
30	Keonjhar I	Jhumpura	Chauthia to Jagannathpur road	3.88	No	No	25	0	0	0	0	0
31	Keonjhar I	Ghatgaon	Chandposi to Deobandha road (R.D.Road to Badajuli)	2.40	No	No	48	0	0	0	0	0
31	<b>Sub Total</b>			<b>100.92</b>								
1	Keonjhar II	Champua	Unchabali- Rengalbeda	2.10	No	No	39	0	0	0	0	0
2	Keonjhar II	Champua	Jally- Tangarpada	6.49	No	No	45	0	0	0	0	0
3	Keonjhar II	Joda	PWD Road- Barapada	4.00	Yes	Apl	36	0	0	0	0	0
4	Keonjhar II	Keonjhar-II	PWD Road- Kankana	12.20	No	No	205	0	0	0	0	0
5	Keonjhar II	Jhumpura	Mahadevpur -Parbatipur	3.30	No	No	51	0	0	0	0	0
6	Keonjhar II	Jhumpura	PS Road- Ranipur	3.10	No	No	48	0	0	0	0	0

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7	Keonjhar II	Jhumpura	Nayagarh-Saradhapanka	3.90	No	No	49	0	0	0	0	0
8	Keonjhar II	Jhumpura	Basantapur -Kaijoda	3.80	No	No	52	0	0	0	0	0
9	Keonjhar II	Jhumpura	Nayagarh - Jalpaposi	3.50	No	No	95	0	0	0	0	0
10	Keonjhar II	Banspal	Uperkaipur- Mamulaposi	4.30	Yes	Apl	120	0	0	0	0	0
11	Keonjhar II	Banspal	NH-6 -Lunagarh	6.30	Yes	Apl	35	0	0	0	0	0
12	Keonjhar II	Banspal	Nayakot - Ambadala	3.80	Yes	Apl	45	0	0	0	0	0
13	Keonjhar II	Banspal	PWD Road- Kadalibadi	2.50	Yes	Apl	61	0	0	0	0	0
14	Keonjhar II	Banspal	Phuljhar - Sakari	8.80	Yes	Apl	155	0	0	0	0	0
15	Keonjhar II	Banspal	NH-6 - Lata	8.00	Yes	Apl	67	0	0	0	0	0
16	Keonjhar II	Banspal	PWD Road- Kanthada	4.15	Yes	Apl	56	0	0	0	0	0
17	Keonjhar II	Telkoi	PWD Road- Ramachandrapur	2.00	Yes	Apl	13	0	0	0	0	0
18	Keonjhar II	Telkoi	PWD Road - Lokanathpur	1.50	Yes	Apl	59	0	0	0	0	0
19	Keonjhar II	Banspal	Jatra - Ladapani	7.50	Yes	Apl	102	0	0	0	0	0
20	Keonjhar II	Telkoi	RD Road - Purusottampur	5.50	Yes	Apl	78	0	0	0	0	0
21	Keonjhar II	Banspal	PWD Road- Panasuan	9.95	Yes	Apl	126	0	0	0	0	0
22	Keonjhar II	Telkoi	Kaliahata - Kantini	3.70	Yes	Apl	46	0	0	0	0	0
23	Keonjhar II	Telkoi	Kaliahata- Karangapal	5.15	Yes	Apl	106	0	0	0	0	0
24	Keonjhar II	Telkoi	RD Road(Deuldiha) - Ragada	8.30	Yes	Apl	28	3	2	0	1	0
25	Keonjhar II	Champua	Kankada -Nuagaon	2.50	No	No	35	0	0	0	0	0
26	Keonjhar II	Champua	Basudevpur- Sunariposi	3.15	No	No	27	0	0	0	0	0
26	<b>Sub Total</b>			<b>129.49</b>								
1	Bhubaneswar	Bolagarh	Badanayapalli to Suanal	4.00	No	No	6	0	0	0	0	0
2	Bhubaneswar	Bolagarh	RD road to Ekadalia	2.11	No	No	35	0	3	0	0	0
3	Bhubaneswar	Bolagarh	Kalanga to Paikasahi via Phiripirapatna	2.02	No	No	11	0	0	0	0	0
4	Bhubaneswar	Bolagarh	Deuli to Talatumba road	2.50	No	No	8	0	0	0	0	0
5	Bhubaneswar	Tangi	Nalasingh to Totapada	3.20	No	No	16	0	0	0	0	0
6	Bhubaneswar	Balianta	Balipatna RD road to Hotasahi	2.40	No	No	42	3	2	0	0	0
7	Bhubaneswar	Balianta	Prataprudrapur to Nuasahi	2.90	No	No	18	1	4	0	0	0
8	Bhubaneswar	Balianta	PMC to Bhaichuamandagada	3.30	No	No	11	0	0	0	0	0
9	Bhubaneswar	Balianta	Balianta to Chandanbasta	3.25	No	No	6	0	0	0	0	0
10	Bhubaneswar	Balipatna	Nariso Meladanda to Chandiapada	2.30	No	No	7	0	1	0	0	0
11	Bhubaneswar	Balipatna	Nariso to Badapokharisahi	2.00	No	No	14	0	2	0	0	0
12	Bhubaneswar	Balianta	Bisuniapada to Baliamala	1.50	No	No	17	2	4	0	1	0
13	Bhubaneswar	Balianta	Bhargabi Right Embankment to Terabatia	2.90	No	No	14	0	2	0	0	0
14	Bhubaneswar	Balipatna	Dalakasati Sanmachhapur	3.00	No	No	11	0	0	0	0	0
15	Bhubaneswar	Balipatna	Madhuban Darada road to Deulapokhari	1.86	No	No	24	0	3	0	0	0
16	Bhubaneswar	Balipatna	Bhakarsahi to Naranpur	3.15	No	No	10	0	4	0	0	0
17	Bhubaneswar	Banapur	R D road to Kandha Ambajhar	2.00	No	No	15	0	3	0	0	0
18	Bhubaneswar	Khurda	Naranagarh Girls High School to Bhogapur	2.16	No	No	11	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
18	<b>Sub Total</b>			<b>46.55</b>								
1	Koraput	Koraput	N.H-43 To Chapsil Road	1.85	Yes	No	4	0	0	0	0	0
2	Koraput	Dasmantpur	P.S. Road To Runjaguda	4.50	Yes	No	51	0	0	0	0	0
3	Koraput	Kundra	Dighapur to Gumar	3.00	Yes	No	104	0	0	0	0	0
4	Koraput	Nandapur	PWD (RD) road to Badliguda	4.50	Yes	No	56	0	0	0		0
5	Koraput	Koraput	P.W.D road to Ambagam	2.70	Yes	No	21	0	0	0	0	0
6	Koraput	Lamtaput	RD road to Jodaput	7.50	Yes	No	23	0	0	0	0	0
7	Koraput	Nandapur	RD road to Sobhaput	6.70	Yes	No	56	0	0	0	0	0
8	Koraput	Nandapur	RD road to Khadaput Boding	4.50	Yes	No	35	0	0	0	0	0
9	Koraput	Boriguma	NH-43 to Banduguda	10.19	Yes	No	25	0	0	0	0	0
10	Koraput	Kundra	Beheraguda to Katriguda	7.00	Yes	No	191	0	0	0	0	0
11	Koraput	Boipariguda	PWD Road to Kadamguda	2.00	Yes	No	26	0	0	0	0	0
12	Koraput	Lamtaput	RD road to Maliguda via Bandhanpada.	3.60	Yes	No	39	0	0	0	0	0
13	Koraput	Boriguma	Aunli to Majhia	2.08	Yes	No	35	0	0	0	0	0
14	Koraput	Kotpad	Ghatarla to Kusumguda	1.54	No	No	26	0	0	0	0	0
15	Koraput	Kundra	RD Road to Nuaguda	1.30	Yes	No	25	0	0	0	0	0
16	Koraput	Lamtaput	RD road to Guneipada.	1.30	Yes	No	13	0	0	0	0	0
17	Koraput	Kotpad	Kharagpur to Kumahandi	5.60	No	No	56	0	0	0	0	0
18	Koraput	Lamtaput	RD road to Lamanda	1.20	Yes	No	25	0	0	0	0	0
19	Koraput	Koraput	N.H-43 to Panaspur Road	4.60	Yes	No	63	0	0	0	0	0
20	Koraput	Koraput	R.D Road to Daleiput	1.20	Yes	No	159	0	0	0	0	0
21	Koraput	Lamtaput	MDR to Silpeda	1.55	Yes	No	21	0	0	0	0	0
22	Koraput	Jeypore	MDR SH-48 to Bali Pujariput	1.55	No	No	33	0	0	0	0	0
23	Koraput	Nandapur	RD road to Khingmung Karanjaguda	4.50	Yes	No	56	0	0	0	0	0
24	Koraput	Dasmantpur	Mujango to Champapadar (Dengajaniguda)	5.20	Yes	No	61	0	0	0	0	0
25	Koraput	Jeypore	MDR SH48 to Singbandha	4.83	No	No	81	0	0	0	0	0
26	Koraput	Jeypore	Dhanpur to Targei	2.08	No	No	39	0	0	0	0	0
27	Koraput	Kotpad	Batasana to Thakadugulahandi	5.50	Yes	No	68	0	0	0	0	0
28	Koraput	Kundra	Raniguda to Atigam	5.45	Yes	No	75	0	0	0	0	0
29	Koraput	Boriguma	Katharagada to Mankidiala Road	4.50	Yes	No	58	0	0	0	0	0
30	Koraput	Boriguma	Katharagada to Katahandi Road	5.50	Yes	No	95	0	0	0	0	0
31	Koraput	Kundra	Ghumar to Hatakudupi	2.80	Yes	No	70	0	0	0	0	0
32	Koraput	Kundra	Bagderi to Kantinikunda	4.00	Yes	No	57	0	0	0	0	0
32	<b>Sub Total</b>			<b>124.31</b>								
1	Sunabeda	Laxmipur	Upperchampi (P.W.D. Road) to Talachampi	3.00	No	No	115	0	0	0	0	0
2	Sunabeda	Laxmipur	R.D Road to Kenduwada	2.50	No	No	95	0	0	0	0	0
3	Sunabeda	Semiliguda	Sorisapadar(NH-26) to Bhitarkota	11.00	Yes	Apl	176	0	0	0	0	0
4	Sunabeda	Narayanpatna	P.S Road to Tingnaput	1.80	No	No	56	0	0	0	0	0
5	Sunabeda	Laxmipur	P.S. Road to Maligan	2.50	No	No	45	0	0	0	0	0
6	Sunabeda	Laxmipur	P.W.D. Road to Niraniguda	2.10	No	No	91	0	0	0	0	0
7	Sunabeda	Semiliguda	Bilaput to Bhitarsubai	1.00	No	No	11	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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8	Sunabeda	Pottangi	Sipaiput(NH-26) to Malkarbandha	3.40	Yes	Apl	113	0	0	0	0	0
9	Sunabeda	Laxmipur	P.S. Road to Ramijholla	3.00	No	No	78	0	0	0	0	0
10	Sunabeda	Laxmipur	P.W.D. Road to Jholaguda	8.00	No	No	156	0	0	0	0	0
11	Sunabeda	Pottangi	Jamuguda (NH-26) to Bitra	7.50	No	No	28	0	0	0	0	0
12	Sunabeda	Semiliguda	Malimarla to Uppergelaguda	1.50	Yes	Apl	43	0	0	0	0	0
13	Sunabeda	Semiliguda	N.A.D to Balda	2.60	No	No	59	0	0	0	0	0
14	Sunabeda	Semiliguda	P.W.D Road to Adamunda	4.00	No	No	81	0	0	0	0	0
15	Sunabeda	Narayanpatna	SH-50 to Pachingi	3.30	No	No	72	0	0	0	0	0
16	Sunabeda	Laxmipur	Upperchampi to Jambirijhola (Upper Bilangsil)	6.10	No	No	120	0	0	0	0	0
17	Sunabeda	Semiliguda	R.D. Road to Deula	3.00	No	No	48	0	0	0	0	0
18	Sunabeda	Semiliguda	Nalco road to Masuriguda (Missinguda)	1.00	Yes	Apl	15	0	0	0	0	0
19	Sunabeda	Pottangi	R.D. Road to Debaguntha via Sangamguda	3.80	No	No	34	0	0	0	0	0
20	Sunabeda	Pottangi	(A) P.W.D. Road (R.D. Road) to Marialpadu	0.95	No	No	9	0	0	0	0	0
21	Sunabeda	Pottangi	(B) R.D. Road to Putapadu	0.95	No	No	14	0	0	0	0	0
22	Sunabeda	Semiliguda	NH-43 (26) to Daleiguda	6.00	No	No	150	0	0	0	0	0
23	Sunabeda	Semiliguda	NH-43 (26) to Bileiguda	2.80	Yes	Apl	62	0	0	0	0	0
24	Sunabeda	Pottangi	R.D. Road(P.W.D Road) to Teda	1.40	No	No	8	0	0	0	0	0
25	Sunabeda	Pottangi	Dalapatiguda to Pangiguda via Dusariguda	2.40	No	No	15	0	0	0	0	0
26	Sunabeda	Pottangi	(A) NH-43(26) to Sakirai	1.70	No	No	30	0	0	0	0	0
27	Sunabeda	Pottangi	(B) NH-43 (26) to Dumuriguda	0.85	No	No	52	0	0	0	0	0
28	Sunabeda	Semiliguda	N.H.-43(26) to Kadamguda	2.10	No	No	56	0	0	0	0	0
29	Sunabeda	Semiliguda	Charangul to Hanjaraguda	2.30	No	No	25	0	0	0	0	0
30	Sunabeda	Semiliguda	Tiapar to Phulbandha	2.00	No	No	62	0	0	0	0	0
31	Sunabeda	Semiliguda	Mukhibedi to Challanput	2.60	No	No	85	0	0	0	0	0
32	Sunabeda	Pottangi	RD Road to Guntha, Jhankarada via Kapatiguda	4.00	No	No	75	3	0	0	0	0
33	Sunabeda	Pottangi	NH-43 (26) to Siura	3.10	No	No	62	0	0	0	0	0
34	Sunabeda	Pottangi	P.W.D Road to Upperbandha	1.60	Yes	Apl	29	0	0	0	0	0
35	Sunabeda	Laxmipur	P.W.D. Road to Bogeipadar	2.00	No	No	78	0	0	0	0	0
36	Sunabeda	Narayanpatna	P.S. Road(PMGSY) to Semla	4.25	No	No	120	0	0	0	0	0
37	Sunabeda	Narayanpatna	PWD Road to Sabaput, Bisipur	3.10	No	No	98	0	0	0	0	0
38	Sunabeda	Bandhugaon	P.W.D.Road to Kesabadhra	1.80	No	No	25	0	0	0	0	0
39	Sunabeda	Bandhugaon	P.W.D. Road to Jhumuka	3.00	Yes	Apl	45	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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40	Sunabeda	Bandhugaon	Jarpa (P.W.Droad) to Lundurukana	5.00	Yes	Apl	65	0	0	0	0	0
41	Sunabeda	Narayanpatna	P.W.D.Road to Khajaguda	2.40	Yes	Apl	86	0	0	0	0	0
42	Sunabeda	Narayanpatna	P.W.D Road to Dhaiguda	2.50	Yes	Apl	78	0	0	0	0	0
43	Sunabeda	Narayanpatna	Bijaghati to Keragan	3.00	Yes	No	29	0	0	0	0	0
44	Sunabeda	Laxmipur	P.W.D. Road(P.S Road) to Putsil	4.00	Yes	No	79	0	0	0	0	0
<b>44</b>	<b>Sub Total</b>			<b>136.90</b>								
1	Baripada	Moroda	Bhaliadiha to Sunahaja	7.00	Yes	Apl	106	0	0	0	0	0
2	Baripada	Moroda	PWD Road to Idor	3.00	No	No	49	0	10	0	0	0
3	Baripada	Betnoti	RD Road at Durgapur to Sardiha	4.50	Yes	Apl	94	0	0	0	0	0
<b>3</b>	<b>Sub Total</b>			<b>14.50</b>								
1	Karanjia	Bangiriposi	Andala to Naikali	7.00	No	No	178	0	0	0	0	0
2	Karanjia	Bangiriposi	RD road to Kurkutia	2.00	No	No	58	0	0	0	0	0
3	Karanjia	Bangiriposi	RD road to Mahupahadi	1.00	No	No	35	0	0	0	0	0
4	Karanjia	Bangiriposi	RD road to Majhigaon	2.30	No	No	78	0	0	0	0	0
5	Karanjia	Bangiriposi	RD road to Kundalabani	5.60	Yes	No	247	0	0	0	0	0
6	Karanjia	Bangiriposi	Rayan to Pandubadi	4.50	No	No	97	0	0	0	0	0
7	Karanjia	Bangiriposi	Rayan to Ramaharipur	4.50	No	No	136	0	0	0	0	0
8	Karanjia	Bangiriposi	MDR-45 to Jamdapal	1.10	No	No	78	0	0	0	0	0
9	Karanjia	Bangiriposi	Ghatkuanri to Domuhani	1.10	Yes	No	59	0	0	0	0	0
10	Karanjia	Bisoi	RD road to Chuakankar	2.90	Yes	Apl	49	0	0	0	0	0
11	Karanjia	Bisoi	NH-6 to Hatichhad	7.60	No	No	206	0	0	0	0	0
12	Karanjia	Bisoi	SH-50 to Sunajodia	5.00	No	No	120	0	0	0	0	0
13	Karanjia	Bisoi	SH-50 to Gargadi	2.50	No	No	75	0	0	0	0	0
14	Karanjia	Bisoi	SH-50 to Banapokharia	2.50	Yes	No	68	0	0	0	0	0
15	Karanjia	Bisoi	Baneikala to Patijhari	4.10	No	No	103	0	0	0	0	0
16	Karanjia	Sukruli	RD road to Silmaposi	2.25	No	No	56	0	0	0	0	0
17	Karanjia	Raruan	RD road to Purunapani	1.50	Yes	NR	45	0	0	0	0	0
18	Karanjia	Jashipur	Gandirabeda chhak (Aski) to Asura	4.10	No	No	78	0	0	0	0	0
19	Karanjia	Jashipur	Badasialnai to Sansialnai	2.75	Yes	Apl	51	0	0	0	0	0
20	Karanjia	Jashipur	Siltia to Banapandugandi	2.88	No	No	56	0	0	0	0	0
21	Karanjia	Karanjia	PWD road to Baliposi	1.10	Yes	Apl	35	0	0	0	0	0
22	Karanjia	Karanjia	RD road to Jhatiali	2.25	No	No	46	0	0	0	0	0
23	Karanjia	Karanjia	NH-6 to Jarali	3.05	No	No	50	0	0	0	0	0
24	Karanjia	Karanjia	NH-6 to Jarasahi	2.05	Yes	Apl	75	0	0	0	0	0
25	Karanjia	Thakurmunda	Thakurmunda (R D Road ) to Niscintpur	4.63	Yes	Apl	99	0	0	0	0	0
26	Karanjia	Thakurmunda	S.H-53 to Nipania	2.55	Yes	Apl	162	0	0	0	0	0
27	Karanjia	Thakurmunda	S.H-53 o Padhiarsahi	2.60	Yes	Apl	46	0	0	0	0	0
28	Karanjia	Thakurmunda	R D Road to khasakudar	2.84	No	No	68	0	0	0	0	0
29	Karanjia	Thakurmunda	R D Road to San-Andharikhman	1.82	Yes	Apl	59	0	0	0	0	0
30	Karanjia	Thakurmunda	R D Road to Chaulajhari	3.54	Yes	Apl	69	0	0	0	0	0
31	Karanjia	Thakurmunda	Salchua (Nada) to Karadapal	3.00	Yes	Apl	75	0	0	0	0	0
<b>31</b>	<b>Sub Total</b>			<b>96.61</b>								
1	Rairangpur	Bahalda	Fatatanger to Patkadihi ( Sagjodi )Road(N)	2.50	No	No	45	0	1	0	0	0
2	Rairangpur	Bahalda	Tarana to Patramahulpani ( Thakurbadi ) Road(N)	2.00	Yes	No	18	0	0	0	0	0
3	Rairangpur	Tiring	Jirei to Nandua ( Bijaybasa ) Road(N)	2.90	No	No	35	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
4	Rairangpur	Tiring	Rengalbeda to Dhobadhubani ( Gobrasol ) Road(N)	2.60	No	No	26	0	0	0	0	0
5	Rairangpur	Tiring	Nuadihi to Baldapada road(N)	1.50	No	No	20	0	0	0	0	0
6	Rairangpur	Tiring	S.H.-50 at Nuagaon to Dakadihi (Dinasasan) road(N)	1.50	Yes	No	38	0	0	0	0	0
7	Rairangpur	Kusumi	O.D.R to Ghadadega road	6.93	Yes	No	105	0	0	0	0	0
8	Rairangpur	Kusumi	R.D. road to Dhakata road(Dova to Ralibeda)	4.70	Yes	No	65	0	0	0	0	0
9	Rairangpur	Kusumi	ODR to Dudhijharan	1.35	Yes	No	85	0	0	0	0	0
10	Rairangpur	Rairangpur	M.D.R to Sanchampouda Road	4.90	No	No	86	0	0	0	0	0
11	Rairangpur	Rairangpur	Sundhal to Katupit(N)	8.50	No	No	201	0	0	0	0	0
12	Rairangpur	Rairangpur	Guhaldangri to Dublabeda (N)	4.90	No	No	62	0	0	0	0	0
13	Rairangpur	Rairangpur	Kuldiha to Kahutuka Road (N)	5.80	No	No	100	0	0	0	0	0
14	Rairangpur	Rairangpur	Badgaon to Rehedakocha (N)	2.40	No	No	30	0	0	0	0	0
15	Rairangpur	Rairangpur	Gorumahisani to Gidighaty(N)	3.30	Yes	Apl	237	0	0	0	0	0
16	Rairangpur	Rairangpur	Guhaldangri to Jampani (N)	1.80	No	No	26	0	0	0	0	0
17	Rairangpur	Bijatata	Dalki to Badbil road	8.46	Yes	No	96	0	0	0	0	0
18	Rairangpur	Bijatata	R.D road to Kaduani road	4.63	Yes	Apl	88	0	0	0	0	0
19	Rairangpur	Bijatata	(A)S.H -50(Madansila PMGSYroad) to Sanjharan	3.26	Yes	Apl	55	0	0	0	0	0
20	Rairangpur	Bijatata	(B)Raihari ( N.H - 6 ) to Jaldiha	3.89	No	No	65	0	0	0	0	0
21	Rairangpur	Jamda	R.D Road To Hensda	1.83	No	No	35	0	0	0	0	0
22	Rairangpur	Kusumi	R.D. Road to Changbaria road	2.70	Yes	No	51	0	0	0	0	0
23	Rairangpur	Kusumi	R.D road to Badjaidhanposi road	3.09	Yes	No	71	0	0	0	0	0
24	Rairangpur	Bijatata	Chadheipahadi to Balarampur	7.33	Yes	No	105	2	0	0	0	0
25	Rairangpur	Kusumi	ODR to Dighia road (RD Road to Sanjoidanposi)\	1.10	Yes	No	23	0	0	0	0	0
<b>25</b>	<b>Sub Total</b>			<b>93.86</b>								
1	Nawrangpur	Dabugam	Badaoloma to Khutuluguda	3.50	Yes	No	33	0	0	0	0	0
2	Nawrangpur	Dabugam	RD Road to Barkiguda road	3.03	Yes	No	43	1	0	0	0	0
3	Nawrangpur	Dabugam	PWD Road to Jandriguda road	2.50	Yes	No	31	0	0	0	0	0
4	Nawrangpur	Dabugam	Rabanaguda to Sapadharaguda	2.10	No	No	45	2	0	0	0	0
5	Nawrangpur	Kosagumuda	Sana-Amda to Neigaon	4.80	Yes	No	3	0	0	0	0	0
6	Nawrangpur	Nandahandi	Bhanjaguda to Poluguda	2.50	Yes	No	22	2	0	0	0	0
7	Nawrangpur	Nandahandi	RD Road to Gaijaguda	2.00	Yes	No	59	0	0	0	0	0
8	Nawrangpur	Nabarangapur	R.D Road to Boxaguda	2.00	Yes	No	31	2	0	0	0	0
9	Nawrangpur	Nowrangpur	RD Road to Kochiaguda	1.55	No	No	18	3	0	0	0	0
10	Nawrangpur	Nowrangpur	RD Road to Sonuguda	2.70	Yes	No	25	1	0	0	0	0
11	Nawrangpur	Papadahandi	SH - 39 Jn. To Birisola	3.20	Yes	No	49	1	0	0	0	0



SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
12	Nawrangpur	Papadahandi	Biriguda to Jhidingiguda	1.30	Yes	No	28	0	0	0	0	0
13	Nawrangpur	Papadahandi	RD Road to Kartiguda	11.90	Yes	No	110	1	0	0	0	0
14	Nawrangpur	Papadahandi	Dhansuli to Palasaguda	4.20	Yes	No	59	2	0	0	0	0
15	Nawrangpur	Papadahandi	NH Jn. To Disariguda	1.10	Yes	No	19	1	0	0	0	0
16	Nawrangpur	Papadahandi	Kodabaata to Haradaguda	2.00	Yes	No	19	0	0	0	0	0
17	Nawrangpur	Tentulikhunti	Project road to Nuapujariguda	1.40	Yes	No	23	0	0	0	0	0
18	Nawrangpur	Tentulikhunti	Bhitartmengra to Boriguda	1.50	No	No	18	1	0	0	0	0
19	Nawrangpur	Tentulikhunti	RD road to Nuaguda	0.50	Yes	No	4	0	0	0	0	0
20	Nawrangpur	Dabugam	Pakhanaguda to Maniaguda	3.25	Yes	No	67	2	0	0	0	0
21	Nawrangpur	Papadahandi	Ghusarabeda to Ratiguda	5.00	Yes	No	79	1	0	0	0	0
22	Nawrangpur	Papadahandi	Kodabhata to Mundaguda	1.40	Yes	No	37	0	0	0	0	0
23	Nawrangpur	Papadahandi	RD Road Jn. To Sikadaguda	3.50	Yes	No	23	0	0	0	0	0
24	Nawrangpur	Papadahandi	Biriguda to Khutiaguda	3.50	No	No	26	0	0	0	0	0
25	Nawrangpur	Papadahandi	Miriguda to Dakribeda	3.50	Yes	No	23	0	0	0	0	0
26	Nawrangpur	Papadahandi	SH - 39 Jn. to Dalchaparaguda	3.80	No	No	94	2	0	0	0	0
27	Nawrangpur	Papadahandi	NH Jn. To Minja	4.00	Yes	No	22	0	0	0	0	0
28	Nawrangpur	Papadahandi	PS Road to Kukurabindha	2.50	Yes	No	55	0	0	0	0	0
29	Nawrangpur	Papadahandi	Dongra to Kumbharaguda	4.70	Yes	No	85	1	0	0	0	0
29	<b>Sub Total</b>			<b>88.93</b>								
1	Nuapada	komna	Batibahal to Sunabeda(Part-A)	10.00	Yes	No	201	0	0	0	0	0
2	Nuapada	komna	Batibahal to Sunabeda(Part-B)	10.00	Yes	No	189	0	0	0	0	0
3	Nuapada	komna	Cherichuan to Kankermanji(Part-A)	9.00	Yes	No	86	0	0	0	0	0
4	Nuapada	komna	Cherichuan to Kankermanji(Part-B)	8.00	Yes	No	78	3	0	0	0	0
5	Nuapada	komna	Kotrabeda to Deosil	8.00	Yes	No	82	0	0	0	0	0
6	Nuapada	Boden	Patdarha to Kathphar(Part-A)	7.00	Yes	No	79	0	0	0	0	0
7	Nuapada	Boden	Patdarha to Kathphar(Part-B)	6.00	Yes	No	58	0	0	0	0	0
8	Nuapada	komna	Sunabeda to Gatibeda	5.00	Yes	No	42	0	0	0	0	0
9	Nuapada	komna	Sunabeda to Jamgaon	6.50	Yes	No	65	0	0	0	0	0
10	Nuapada	komna	Sunabeda to Soseng	8.00	Yes	No	35	0	0	0	0	0
11	Nuapada	Nuapada	SH-3 Sunsunia to Dehenpara	3.90	Yes	No	120	0	0	0	0	0
12	Nuapada	Nuapada	RD Road to Bhalukana	2.00	Yes	No	9	0	0	0	0	0
13	Nuapada	Nuapada	Amodi to Tamkidadar(Road-A)	1.60	Yes	No	38	0	0	0	0	0
14	Nuapada	Nuapada	RD Road to Negipali(Road-B)	2.00	Yes	No	25	0	0	0	0	0
15	Nuapada	Nuapada	RD Road to Sethjampani via Masrangji	4.20	Yes	No	62	0	0	0	0	0
16	Nuapada	komna	Poinr to Anupgad	1.50	Yes	No	35	0	0	0	0	0
17	Nuapada	komna	Komna Nuagaon Road to Patpani	4.00	Yes	No	78	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
18	Nuapada	komna	PWD Road to Tukelapada	1.90	Yes	No	21	0	0	0	0	0
19	Nuapada	komna	PWD Road to Bandajore via Barnapat	2.60	Yes	No	20	0	0	0	0	0
20	Nuapada	komna	Chhata to Kotenpara	2.30	Yes	No	28	0	0	0	0	0
21	Nuapada	komna	Kurumpani-Lakhna Road to Thakurpali	2.10	Yes	No	52	0	0	0	0	0
22	Nuapada	komna	Thango to Mawalbhata	5.00	Yes	No	78	0	0	0	0	0
23	Nuapada	Khariar	Vijaypur to Gordhuapadar	2.50	Yes	No	42	0	0	0	0	0
24	Nuapada	Khariar	SH-16 to Sandohel	1.40	Yes	No	21	0	0	0	0	0
25	Nuapada	Khariar	MDR-121 to Kikiribeda	1.50	Yes	No	12	0	0	0	0	0
26	Nuapada	Khariar	Lanji to Vemapadar	4.20	Yes	No	65	0	0	0	0	0
27	Nuapada	Khariar	Deobahal to Thongopada	1.60	Yes	No	20	0	0	0	0	0
28	Nuapada	Khariar	Bankapur to Khairbadi	2.50	Yes	No	32	0	0	0	0	0
29	Nuapada	Khariar	Ranimunda to Palma	1.30	No	No	16	0	0	0	0	0
30	Nuapada	Khariar	NH-217 to Sandibahali	1.60	Yes	No	27	0	0	0	0	0
31	Nuapada	Khariar	Chancharabhata to Hanspada	1.50	No	No	17	0	0	0	0	0
32	Nuapada	sinapali	Timpur to Rebedi	3.60	Yes	No	46	0	0	0	0	0
33	Nuapada	sinapali	Palsapada to Dongergaon	1.30	Yes	No	15	0	0	0	0	0
34	Nuapada	sinapali	PS Road to Sonversa	2.80	Yes	No	32	0	0	0	0	0
35	Nuapada	sinapali	PWD Road to Karlapani	2.70	Yes	No	28	0	0	0	0	0
36	Nuapada	sinapali	Telekote to Sindursil	2.60	Yes	No	26	0	0	0	0	0
37	Nuapada	Boden	PWD Road to Mahulpadar	4.00	Yes	No	42	0	0	0	0	0
38	Nuapada	Boden	Bhainsadani to Sirigidi	5.30	Yes	No	59	0	0	0	0	0
39	Nuapada	komna	NH-217 to Bilenjore	2.30	Yes	No	29	0	0	0	0	0
40	Nuapada	komna	Mendhatal to Dangargaon via Dedenga	3.00	Yes	No	45	0	0	0	0	0
40	<b>Sub Total</b>			<b>156.30</b>								
1	Phulbani	Raikia	Kilkia (T-5) to Didrabadi	13.50	No	No	152	0	0	0	0	0
2	Phulbani	Chakapad	RD Road to Pandrisima	3.30	Yes	No	52	0	0	0	0	0
3	Phulbani	G. Udayagiri	RD Road to Sakadi	5.80	No	No	85	0	0	0	0	0
4	Phulbani	Baliguda	Sudra to Tikarabaju	9.00	Yes	No	135	0	0	0	0	0
5	Phulbani	Daringibadi	Pangaraha (NH-217) to Iripisura	7.50	Yes	No	86	0	0	0	0	0
6	Phulbani	Khajuripada	PWD Road to Meru(Lambabadi)	8.00	No	No	75	0	0	0	0	0
7	Phulbani	K. Nuagaon	Sainipada to Dargaon	4.20	Yes	No	53	0	0	0	0	0
8	Phulbani	Daringibadi	Badipadar (NH-217) to Baimela	13.20	Yes	No	205	0	0	0	0	0
9	Phulbani	Khajuripada	Garakumpa to Balisugri	4.00	Yes	No	88	0	0	0	0	0
10	Phulbani	Khajuripada	Nediguda to Gundribadi	2.00	Yes	No	42	0	0	0	0	0
11	Phulbani	K. Nuagaon	PWD Road T-5 Dharampur to Letingia (Reach-I) RD 0/0 to 1/110 Km & 2/100 to 9/00 Km	9.00	Yes	No	52	0	0	0	0	0
12	Phulbani	Kotagarh	Subarnagiri to Parigada Road (Reach - I) RD 0/0 to 4/260 & 4/560 to 5/790 & 6/050 to 9/0 Km	8.84	Yes	No	88	0	0	0	0	0
13	Phulbani	Kotagarh	Subarnagiri to Parigada Road (Reach-IV) RD 9/0 to 18/0 Km	9.00	Yes	No	75	0	0	0	0	0
13	<b>Sub Total</b>			<b>97.34</b>								
1	Puri	Kanas	N.J. Sadak to Balipada-A	2.40	No	No	4	0	0	0	0	0

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2	Puri	K.Prasad	Badabhuin to Gangadharur	1.10	No	No	9	0	0	0	0	0
3	Puri	K.Prasad	PWD road to Anandpur	0.80	No	No	8	0	0	0	0	0
4	Puri	K.Prasad	PWD road to Kamalasingh	1.83	No	No	23	0	0	0	0	0
5	Puri	K.Prasad	Badajhada to Samantarapur	2.20	No	No	8	0	0	0	0	0
6	Puri	K.Prasad	PWD road to Noliasahi	2.30	No	No	24	0	0	0	0	0
7	Puri	K.Prasad	PWD road to Paikarapur	1.10	No	No	12	0	0	0	0	0
8	Puri	Puri	Siruli Project road to Jirakandi	1.10	No	No	14	0	0	0	0	0
9	Puri	K.Prasad	R.D. road to Kahneipur	1.30	No	No	14	0	0	0	0	0
10	Puri	Pipili	Kasarda to Rajtei	2.08	No	No	16	0	0	0	0	0
11	Puri	Pipili	T-5 to Nalihana	1.24	No	No	3	0	0	0	0	0
12	Puri	Pipili	N.H.203 to Potal	1.86	No	No	63	1	0	0	0	0
13	Puri	Pipili	N.H.203 to Baragarh	1.10	No	No	21	1	0	0	0	0
14	Puri	Pipili	T-5 to Solana	3.94	No	No	17	2	1	0	0	0
15	Puri	Pipili	L-24 to Sarola	1.20	No	No	15	0	0	0	0	0
16	Puri	Pipili	N.H.203 to Malibarahi	1.33	No	No	19	1	0	0	0	0
17	Puri	Pipili	S.H.13 to Sunapada	2.52	No	No	11	1	0	0	0	0
18	Puri	Pipili	T-6 to Raigurupur	1.00	No	No	42	2	0	0	0	0
19	Puri	Pipili	T-6 to Subudhipada	1.20	No	No	8	2	1	0	0	0
20	Puri	Pipili	N.H.203 to Gobardhanpur S. Nagar	2.00	No	No	14	1	1	0	0	0
21	Puri	Delang	T-4 to Jayapur	2.00	No	No	2	0	0	0	0	0
22	Puri	Delang	T-1 to Golapada	1.20	No	No	5	1	0	0	0	0
23	Puri	Delang	T-7 to Tikarpada	7.00	No	No	18	0	0	0	0	0
24	Puri	Satyabadi	Algum PWD road to Baniasahi	2.00	No	No	22	1	0	0	0	0
25	Puri	Satyabadi	Algum WD road to Bagasahi	0.60	No	No	10	0	0	0	0	0
26	Puri	Satyabadi	N.Someswarpur to Bastapada	0.80	No	No	13	0	0	0	0	0
27	Puri	Satyabadi	Budhang Canal to Balisahi	2.02	No	No	10	1	0	0	0	0
28	Puri	Satyabadi	R.D. road to Otarakera	2.50	No	No	12	1	1	0	0	0
29	Puri	Puri	L-34 to Odasamal	2.00	No	No	23	2	0	0	0	0
30	Puri	Puri	R.D. road to Jagannathpur	2.50	No	No	21	0	0	0	0	0
31	Puri	Puri	N.H.203 to Nilachakranagar	2.70	No	No	14	0	0	0	0	0
32	Puri	Puri	Malatipatpur R.D. road to Rahangiria via-Kanchinala Irrig. Embkt. (golasahi)	7.00	No	No	21	1	2	0	0	0
33	Puri	Puri	N.H.203 to Apila	4.80	No	No	20	0	0	0	0	0
34	Puri	Puri	N.J. Sadak to Karadi	1.80	No	No	16	0	0	0	0	0
35	Puri	Brahmagiri	RD Road to Sahaspur	3.28	No	No	11	0	1	0	0	0
36	Puri	Brahmagiri	L-76 to Jagannathpur	0.60	No	No	4	0	0	0	0	0
37	Puri	Brahmagiri	N.H.203A to Gokhara	1.60	No	No	21	0	0	0	0	0
38	Puri	Brahmagiri	N.H.203 A to Bentapur	1.66	No	No	22	0	0	0	0	0
39	Puri	Brahmagiri	L-58 to Baghalañji	2.01	No	No	17	0	2	0	0	0
40	Puri	Brahmagiri	R.D. road to Haridas	2.57	No	No	1	0	0	0	0	0
41	Puri	Brahmagiri	PWD road to Mirzapur	0.75	No	No	31	0	0	0	0	0
42	Puri	Brahmagiri	L-69 to Danduasipada	2.09	No	No	32	0	0	0	0	0
43	Puri	Brahmagiri	Sikatnuapada to Sisupur	1.00	No	No	4	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
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44	Puri	Kanas	R.D. Road dto Maitratrilochanpur	1.80	No	No	14	1	0	0	0	0
45	Puri	Kanas	R.D. road to Delang Charipada	3.50	No	No	21	0	1	0	0	0
46	Puri	Kanas	L-28 to Rudhupur	8.00	No	No	9	1	0	0	0	0
47	Puri	Kanas	Gadakhara to Malisahi	2.50	No	No	18	1	0	0	0	0
48	Puri	K.Prasad	R.D. road to Jamuna	3.77	No	No	16	1	0	0	0	0
49	Puri	K.Prasad	R.D. Road to Mahanisa	3.00	No	No	17	0	4	0	0	0
50	Puri	K.Prasad	PWD road to Anlakuda	1.90	No	No	13	0	0	0	0	0
51	Puri	K.Prasad	Bhawanipur to Parala	1.67	No	No	19	0	7	0	0	0
52	Puri	K.Prasad	Manikpatna to Sebakpur	2.70	No	No	23	0	0	0	0	0
53	Puri	K.Prasad	PWD road to kandeswar	2.80	No	No	34	0	0	0	0	0
54	Puri	K.Prasad	Naba to Samantarapur	1.71	No	No	22	0	0	0	0	0
55	Puri	K.Prasad	Badadanda to Khamunha	1.00	No	No	16	0	0	0	0	0
56	Puri	K.Prasad	R.D. road to Adalabad	1.00	No	No	5	0	0	0	0	0
57	Puri	Pipili	Podaguna to K.S. Patna	1.30	No	No	9	0	0	0	0	0
<b>57</b>	<b>Sub Total</b>			<b>124.73</b>								
1	Nimapara	Nimapara	P.K Road to Porakana	3.00	No	No	98	7	3	0	1	0
2	Nimapara	Gop	RD Road to Simili	1.50	No	No	54	8	6	0	0	0
3	Nimapara	Nimapara	Bamnai to Tihula	5.00	No	No	320	6	4	0	0	1
4	Nimapara	Gop	M.B Road to Khadisa	6.00	No	No	371	5	3	0	2	0
5	Nimapara	Gop	Mohanty sahi (L-34) to Morada	1.50	No	No	75	7	5	0	1	0
6	Nimapara	Gop	R.D Road to Desunthi	3.00	No	No	153	8	5	0	3	0
7	Nimapara	Astaranga	Edbansa to Paikhala	1.90	No	No	13	0	0	0	0	0
8	Nimapara	Gop	RD Road to Balibasta	2.30	No	No	216	8	4	0	2	0
9	Nimapara	Satyabadi	Padmapur to Rudupur	0.70	No	No	38	4	3	0	1	0
10	Nimapara	Nimapara	T-5 to Chhatahar	3.20	No	No	244	7	5	0	3	0
11	Nimapara	Nimapara	P.K Road to Arilo	4.35	No	No	300	7	3	0	1	0
12	Nimapara	Nimapara	Tititngapada to Kantilo	2.00	No	No	113	4	5	0	2	0
13	Nimapara	Astaranga	L-28 to Osihan	2.10	No	No	38	0	0	0	0	0
14	Nimapara	Astaranga	Manduki to Olara	2.65	No	No	44	0	3	0	0	0
15	Nimapara	Astaranga	L-23 to Olihan	1.80	No	No	27	2	1	0	0	0
16	Nimapara	Satyabadi	Rudupur to Malasahi	1.60	No	No	136	5	2	0	0	0
17	Nimapara	Gop	RD Road to Soma	1.50	No	No	63	7	5	0	1	0
18	Nimapara	Gop	Baulanga to Panchena	3.06	No	No	50	5	3	0	2	0
19	Nimapara	Astaranga	L-47 to Badaola	2.47	No	No	93	5	3	0	0	0
20	Nimapara	Satyabadi	Gabakunda to Chakarapada	1.30	No	No	318	9	5	0	3	0
21	Nimapara	Kakatpur	PWD Road (T3) to Osalanga	1.55	No	No	236	8	5	0	1	0
22	Nimapara	Gop	RD Road to Ampada	3.00	No	No	166	9	7	0	1	0
23	Nimapara	Astaranga	R.D. Road Karanjapur	1.55	No	No	73	2	9	0	0	0
24	Nimapara	Astaranga	PWD Road (T-2) to Silari	4.20	No	No	141	7	5	0	2	0
25	Nimapara	Nimapara	Porakana to Juanlo	1.50	No	No	65	5	3	0	0	0
<b>25</b>	<b>Sub Total</b>			<b>62.73</b>								
1	Sambalpur	Redhakhoh	Charmal to Keutibahali	3.00	No	No	26	0	0		0	0
2	Sambalpur	Naktideul	RD Road to Panduakhoh(Upto Podakhoh)	3.00	Yes	No	11	0	0		0	0
3	Sambalpur	Redhakhoh	RD Road to Sarapal	2.50	Yes	Apl	124	0	0		0	0
4	Sambalpur	Redhakhoh	SH-24 to Dimirimunda	2.00	Yes	Apl	52	0	0		0	0
5	Sambalpur	Redhakhoh	Rengali to Sunamudi	6.50	Yes	Apl	77	0	0		0	0
6	Sambalpur	Jujumura	NH-42 to Budhiakata	2.40	Yes	Apl	67	0	0		0	0
7	Sambalpur	Kuchinda	MDR 26A to Ainlaposi	1.30	No	No	24	0	1		0	0
8	Sambalpur	Kuchinda	Telitleimal to Dhanudihi	3.50	No	No	48	0	0		0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
9	Sambalpur	Kuchinda	Paruabhadri to Pandrikata	0.85	No	No	4	0	2		1	0
10	Sambalpur	Jamankira	RD Road to Banjari	5.30	Yes	Apl	88	0	0		0	0
11	Sambalpur	Dhankuda	NH-6 to Gengtipali	1.43	No	No	3	1	0		0	0
12	Sambalpur	Rengali	Babuchakuli to Meherpada	1.62	No	No	8	0	3		0	0
13	Sambalpur	Jujumura	Dhalpal to Laida	1.62	No	No	8	3	0		0	0
14	Sambalpur	Dhankuda	RD Road to Bakbira	2.85	Yes	No	76	0	0		0	0
15	Sambalpur	Jujumura	NH-6 to Maliamunda	2.70	No	No	18	0	0		0	0
16	Sambalpur	Maneswar	PWD Road to Saradhapali	1.08	No	No	12	0	0	0	0	0
17	Sambalpur	Maneswar	PWD Road to Jampali	0.71	No	No	1	0	0		0	0
18	Sambalpur	Maneswar	RD Road to Karlabahal	1.00	No	No	9	0	0		0	0
19	Sambalpur	Rengali	PWD Road to Bhagia	1.70	No	No	7	0	0		0	0
20	Sambalpur	Maneswar	RD Road to Jharmunda	2.93	Yes	Apl	49	1	0		0	0
21	Sambalpur	Jamankira	Lepeikani to Babejori Road	2.90	No	No	24	1	0		0	0
22	Sambalpur	Jamankira	RD Road to Langabahal (San)	3.20	No	No	21	0	0		0	0
23	Sambalpur	Jamankira	N.H.-6 to Biswalpali	1.45	No	No	49	0	0		0	0
24	Sambalpur	Jamankira	RD Road to Dehurunimal	2.80	No	No	11	0	0		1	0
25	Sambalpur	Jamankira	N.H.-6 to Patrapalli	0.82	No	No	11	0	0		0	0
26	Sambalpur	Bamra	Uttargaon to Dangakhunti	2.22	Yes	Apl	31	0	0		0	0
27	Sambalpur	Bamra	Dumku to Kinabaga	5.28	Yes	Apl	71	0	0		0	0
28	Sambalpur	Redhakhhol	Rengali to Harizanpada (Upto Chakamunda)	4.00	Yes	Apl	102	0	0		0	0
28	<b>Sub Total</b>			<b>70.65</b>								
1	Sonepur	Ullunda	Salepali Chhak to Badmal	3.60	No	No	67	0	0	0	0	0
2	Sonepur	Ullunda	PWD Road to Dakhinpalli	2.00	No	No	81	0	0	0	0	0
3	Sonepur	Ullunda	Nakdein to Pipalkata (Meghanad)	10.00	Yes	Apl	32	0	0	0	0	0
4	Sonepur	Sonepur	T-L RD Road to Jhankarpali	3.20	No	No	24	0	0	0	0	0
5	Sonepur	Sonepur	T-L RD Road to Luhurapali	2.35	No	No	12	1	0	0	0	0
6	Sonepur	Sonepur	Baslat to Dumerkhhol	3.84	No	No	32	2	0	0	0	0
7	Sonepur	Sonepur	NH-224 to Majhimunda-1	1.65	No	No	12	0	0	0	0	0
8	Sonepur	Sonepur	NDPS road to Kudadera	2.61	No	No	21	2	0	0	0	0
9	Sonepur	B.M. Pur	Hanumanpalli Chhak to Deulamunda	3.45	No	No	50	0	0	0	0	0
10	Sonepur	B.M. Pur	PWD Road to Phulchara	1.90	No	No	21	1	0	0	0	0
11	Sonepur	B.M. Pur	Janakpur (RD Road) to Rajanpali	3.20	No	No	91	0	0	0	0	0
12	Sonepur	B.M. Pur	PWD Road to Dahanipali	8.00	No	No	84	1	0	0	0	0
13	Sonepur	B.M. Pur	Kardapal to Barjula	3.00	No	No	73	1	0	0	0	0
14	Sonepur	B.M. Pur	BM Pur-Amarpali RD Road to Bankia	2.52	No	No	46	1	2	0	0	0
15	Sonepur	B.M. Pur	BM Pur Amarpali RD Road (Badmal) to Keshalaga	4.80	No	No	129	0	0	0	0	0
16	Sonepur	Tarava	Tarava-Bramhani RD Road to Rugudipali	3.60	No	No	45	0	0	0	0	0
17	Sonepur	Tarava	Kamsara-Badtenda Road to Tithipali	4.45	No	No	98	0	0	0	0	0
18	Sonepur	Tarava	Kamasara-Balikhamar to Khairabhadri	3.33	No	No	67	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
19	Sonepur	Tarava	Sargaj-Arda Road to Budhakhaman	2.66	No	No	49	0	0	0	0	0
20	Sonepur	Tarava	Sibtala-Lukapada Road to Keketpali	2.25	No	No	19	0	0	0	0	0
21	Sonepur	Dunguripali	Sunapali Chhak to Chamarpur	3.50	No	No	32	5	0	0	0	0
22	Sonepur	Dunguripali	Sanabhalupali to Chhanaabera	5.00	No	No	71	0	0	0	0	0
23	Sonepur	Binika	FM RD Road to P Sahajbahal	3.00	No	No	174	0	0	0	0	0
24	Sonepur	Binika	Gulunda (RD Road) to Piteipali	2.00	No	No	15	0	0	0	0	0
25	Sonepur	Binika	MDR-39 to Pandakital	1.35	No	No	13	0	0	0	0	0
26	Sonepur	Dunguripali	PWD Road to Katapali	3.00	No	No	37	0	0	0	0	0
27	Sonepur	Dunguripali	Gajabandha to Kainsakanda	2.00	No	No	116	0	0	0	0	0
28	Sonepur	Dunguripali	Cherupali-Agalpur RD Road to Telimal	3.00	No	No	98	0	0	0	0	0
29	Sonepur	Ullunda	MJ RD road to Jagannathpali -2	2.00	No	No	45	0	0	0	0	0
30	Sonepur	Ullunda	Kadodara-Khuntulipali RD Road to Bairagipali	6.50	Yes	Apl	51	0	0	0	0	0
31	Sonepur	Dunguripali	Cherupali-Agalpur Road to Gajmal	2.60	No	No	55	0	0	0	0	0
32	Sonepur	Ullunda	PWD road to Dhalei	3.50	Yes	Apl	123 0	0	0	0	0	0
33	Sonepur	Ullunda	Irrigation road to Goyelguri	3.50	Yes	Apl	263	0	0	0	0	0
34	Sonepur	Ullunda	Irrigation road to Radum	4.20	No	No	96	0	0	0	0	0
35	Sonepur	Ullunda	PWD road to Hatipahul	3.00	Yes	Apl	203	0	0	0	0	0
36	Sonepur	B.M. Pur	Tangarsahi Chhak to Khambeswaripali	2.00	No	No	112	0	0	0	0	0
37	Sonepur	B.M. Pur	BMPur Amarpalli road to Ranapalli	1.50	No	No	123	0	0	0	0	0
38	Sonepur	B.M. Pur	Jatasingha Chowk to Anandapur	1.50	No	No	40	0	0	0	0	0
39	Sonepur	B.M. Pur	BMPur Amarpalli RD road to Dadarpalli	1.50	No	No	45	0	0	0	0	0
40	Sonepur	B.M. Pur	Bolipali to Baghartula	2.10	No	No	75	0	0	0	0	0
41	Sonepur	Sonepur	PWD Road to Bankbija	2.60	No	No	199	0	0	0	0	0
42	Sonepur	Sonepur	PWD Road to Pratappur	1.20	No	No	200	0	0	0	0	0
43	Sonepur	Sonepur	NH-224 to Gatarkela	4.70	No	No	88	0	0	0	0	0
44	Sonepur	Sonepur	RD Road to Baldapali	1.98	No	No	76	0	0	0	0	0
45	Sonepur	Sonepur	NH-224 to Singhari	2.00	No	No	67	0	0	0	0	0
46	Sonepur	Sonepur	BA RD Road to Karlakhaman	3.85	No	No	45	0	0	0	0	0
47	Sonepur	Sonepur	LK RD Road to Badipadia	4.15	No	No	88	0	0	0	0	0
48	Sonepur	Sonepur	Asurmunda to Majhimunda	2.00	No	No	65	0	0	0	0	0
49	Sonepur	Sonepur	NDPS Road (MDR-39) to Nagapali	5.20	No	No	78	0	0	0	0	0
50	Sonepur	Sonepur	MK RD Road to Singhbahali	2.50	No	No	71	0	0	0	0	0
51	Sonepur	Sonepur	RD Road to Sankadalipali	1.45	No	No	174	0	0	0	0	0
52	Sonepur	Tarava	Kamsara-Balikhamar to Sukhilasar	3.75	No	No	204	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
53	Sonepur	Tarava	Kamsara-Balikhmar to Polbandh	3.50	Yes	Apl	116	0	0	0	0	0
54	Sonepur	Tarava	Arda to Balipatha	4.10	No	No	91	0	0	0	0	0
55	Sonepur	Tarava	Brahmani (Khuntabandha) road to Pandrapitha	4.60	No	No	68	0	0	0	0	0
56	Sonepur	Tarava	Sargaj Arda Road to Jamkani	2.00	No	No	11	0	0	0	0	0
57	Sonepur	Tarava	Tarva-Brahmani road to Guhiraghat	2.00	No	No	64	0	0	0	0	0
58	Sonepur	Dunguripali	Lingamarini (NH-57) to Chitakilibandhali	5.40	No	No	137	0	0	0	0	0
59	Sonepur	Dunguripali	Badkarley to Amamunda	5.30	No	No	68	0	0	0	0	0
60	Sonepur	Dunguripali	Sahajbahal Canal Road to Kulthipali	2.60	No	No	26	0	0	0	0	0
61	Sonepur	B.M. Pur	Janakpur Chhak to Jubarajpur	4.81	No	No	81	0	0	0	0	0
62	Sonepur	Sonepur	PS Road to Salepali	1.50	No	No	21	0	0	0	0	0
63	Sonepur	Binika	Canal Road to Khaliapali	6.45	No	No	108	0	0	0	0	0
64	Sonepur	Dunguripali	Bandhapali Road to Barpadar	2.50	No	No	52	0	0	0	0	0
65	Sonepur	Tarava	Kamsara-Balikhmar to Chamiapali	2.50	No	No	68	0	0	0	0	0
66	Sonepur	B.M. Pur	PWD Road to Kelgaon	1.70	No	No	25	0	0	0	0	0
67	Sonepur	Sonepur	Mahule to Uperphabsi	4.92	No	No	105	0	0	0	0	0
68	Sonepur	Ullunda	PWD road to Naikpara to PWD road Rathpur chowk (Bagchhera)	9.00	No	No	206	0	0	0	0	0
69	Sonepur	Binika	Baunsuni to Bhikabahali	3.85	No	No	68	0	0	0	0	0
70	Sonepur	Tarava	Kamsara-Badtenda Road to Surajmunda	2.98	No	No	41	0	0	0	0	0
71	Sonepur	Ullunda	PWD road to Limbapali-2	2.00	No	No	35	0	0	0	0	0
72	Sonepur	Tarava	Tarva-Brahmani road to Nadhara	2.50	No	No	61	0	0	0	0	0
73	Sonepur	Tarava	Tarva - Panimura road to Sanbhainro	1.90	No	No	21	0	0	0	0	0
74	Sonepur	Dunguripali	Lingamarin Road to Mahulpali	1.60	No	No	35	0	0	0	0	0
75	Sonepur	Dunguripali	NH201 to Sargul	1.90	No	No	59	0	0	0	0	0
76	Sonepur	Sonepur	Bahirkhaman to Mahulkhunta	1.20	No	No	36	0	0	0	0	0
<b>76</b>	<b>Sub Total</b>			<b>245.35</b>								
1	Sundargarh	Sundargarh	Bhedabahal to Bamandihi Via Bankubahal	5.15	No	No	45	0	0	0	0	0
2	Sundargarh	Balisankara	Talsara to Rengali	7.91	No	No	66	0	0	0	0	0
3	Sundargarh	Kutra	SH-10 to Dhipapada	3.57	No	No	55	0	0	0	0	0
4	Sundargarh	Kutra	Khatkurbahal to Dhipapada Road	8.13	No	No	88	0	0	0	0	0
5	Sundargarh	Lefripada	Mahikani to Dharuadihi	2.80	No	No	78	0	0	0	0	0
6	Sundargarh	Subdega	MDR Road to Badamalbasti	1.91	No	No	76	0	0	0	0	0
7	Sundargarh	Sundargarh	Karla to Sahupara	3.55	No	No	12	0	0	0	0	0
8	Sundargarh	Sundargarh	Kulta to Kuanmal Via Goyalijhumpa	3.10	No	No	84	0	0	0	0	0

SI No	Division	Block	Road Name	Length (Km)	Forest Area		Trees		Utility Shifting			
					Yes/ No	Clearance Apl/ NR	Number	Affected	EP	TP	TW	ET
9	Sundargarh	Sundargarh	Jamtalia to Kabanga via Colonypara	4.76	No	No	79	0	0	0	0	0
10	Sundargarh	Tangarpali	Pudadihi to Jamuna-dhip Via Khamarbahal	2.20	No	No	85	0	0	0	0	0
11	Sundargarh	Kutra	PS Road to Automunda	2.65	No	No	79	0	0	0	0	0
12	Sundargarh	Baragaon	RD Road to Dudungpada	1.25	No	No	30	0	0	0	0	0
13	Sundargarh	Kutra	SH-10 to Panchupada	6.00	No	No	191	0	0	0	0	0
14	Sundargarh	Tangarpali	Nialiapali to Kurludhipa	2.00	No	No	91	0	0	0	0	0
15	Sundargarh	Rajgangpur	Bahium to Kichinda	8.10	No	No	125	0	0	0	0	0
16	Sundargarh	Subdega	SH-31 to Bhagpalbasti	1.65	No	No	135	0	0	0	0	0
17	Sundargarh	Subdega	RD Road to Dehurimunda	2.60	No	No	65	0	0	0	0	0
18	Sundargarh	Sundargarh	Majhapada to Aunlajore Via Chandilipada	2.50	No	No	6	0	0	0	0	0
19	Sundargarh	Tangarpali	RD road to Kripsira	1.10	No	No	45	0	0	0	0	0
<b>19</b>	<b>Sub Total</b>			<b>71.98</b>								
<b>787</b>				<b>2739.55</b>								



## **Appendix 4: Guidelines for Borrow Area Management**

### **I. SELECTION OF BORROW AREAS**

1. Location of borrow areas shall be finalized as per IRC: 10-1961 guidelines. The finalization of locations in case of borrows areas identified in private land shall depend upon the formal agreement between landowners and contractor. If, agreement is not reached between the contractor and landowners for the identified borrow areas sites, arrangement for locating the source of supply of material for embankment and sub-grade as well as compliance to environment requirements in respect of excavation and borrow areas as stipulated from time to time by the Ministry of Environment and Forests, Government of India, and local bodies, as applicable shall be the sole responsibility of the contractor.

2. The contractor in addition to the established practices, rules and regulation will also consider following criteria before finalizing the locations.

- The borrow area should not be located in agriculture field unless unavoidable i.e. barren land is not available.
- The borrow pits preferably should not be located along the roads.
- The loss of productive and agriculture soil should be minimum.
- The loss of vegetation is almost nil or minimum.
- The Contractor will ensure that suitable earth is available.

### **II. CONTRACTOR'S RESPONSIBILITY**

3. The Contractor shall obtain representative samples from each of the identified borrow areas and have these tested at the site laboratory following a testing programme approved by the Engineer. It shall be ensured that the sub-grade material when compacted to the density requirements shall yield the design CBR value of the sub-grade. Contractor shall begin operations keeping in mind following:

- Haulage of material to embankments or other areas of fill shall proceed only when sufficient spreading and compaction plants is operating at the place of deposition.
- No excavated acceptable material other than surplus to requirements of the Contract shall be removed from the site. Contractor should be permitted to remove acceptable material from the site to suit his operational procedure, then shall make consequent deficit of material arising there from.
- Where the excavation reveals a combination of acceptable and un-acceptable materials, the Contractor shall, unless otherwise agreed by the Engineer, carry out the excavation in such a manner that the acceptable materials are excavated separately for use in the permanent works without contamination by the unacceptable materials. The acceptable material shall be stockpiled separately.
- The Contractor shall ensure that he does not adversely affect the stability of excavation or fills by the methods of stockpiling materials, use of plants are siting of temporary buildings or structures.

### **III. BORROWING FROM DIFFERENT LAND-FORMS**

#### **A. Borrow Areas located in Agricultural Lands**

- The preservation of topsoil will be carried out in stockpile

- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal)
- Borrowing of earth will be carried out up to a depth of 1.5m from the existing ground level
- Borrowing of earth will not be done continuously through out the stretch
- Ridges of not less than 8m widths will be left at intervals not exceeding 300m
- Small drains will be cut through the ridges, if necessary, to facilitate drainage
- The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal)
- The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside

**B. Borrow Areas located in Elevated Lands**

- The preservation of topsoil will be carried out in stockpile
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal)
- At location where private owners desire their fields to be levelled, the borrowing shall be done to a depth of not more than 1.5m or up to the level of surrounding fields

**C. Borrow Areas near River side**

- The preservation of topsoil will be carried out in stockpile.
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
- Borrow area near to any surface water body will be at least at a distance of 15m from the toe of the bank or high flood level, whichever is maximum.

**D. Borrow Areas near Settlements**

- The preservation of topsoil will be carried out in stockpile.
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
- Borrow pit location will be located at least 0.75 km from villages and settlements. If un-avoidable, the pit will not be dug for more than 30 cm and drains will be cut to facilitate drainage.
- Borrow pits located in such location will be re-developed immediately after borrowing is completed. If spoils are dumped, that will be covered with a layers of stockpiled topsoil in accordance with compliance requirements with respect MOEF/PPCB guidelines.

**E. Borrow Pits along the Road**

4. Borrow pits along the road shall be discouraged and if deemed necessary and permitted by the Engineer; following precautions are recommended:

- The preservation of topsoil will be carried out in stockpile.

- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
- Ridges of not less than 8m widths should be left at intervals not exceeding 300m.
- Small drains shall be cut through the ridges of facilitate drainage.
- The depth of the pits shall be so regulated that there bottom does not cut an imaginary line having a slope of 1 vertical to 4 horizontal projected from the edge of the final section of bank, the maximum depth of any case being limited to 1.5m.
- Also, no pit shall be dug within the offset width from the toe of the embankment required as per the consideration of stability with a minimum width of 10m.

#### **IV. REHABILITATION OF BORROW AREAS**

5. The objective of the rehabilitation programme is to return the borrow pit sites to a safe and secure area, which the general public should be able to safely enter and enjoy. Securing borrow pits in a stable condition is fundamental requirement of the rehabilitation process. This could be achieved by filling the borrow pit floor to approximately the access road level.

6. Re-development plan shall be prepared by the Contractor before the start of work inline with the owners will require and to the satisfaction of owner. The Borrow Areas shall be rehabilitated as per following;

- Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover. If this is not possible, then excavation sloped will be smoothed and depression will be filled in such a way that it looks more or less like the original round surface.
- Borrow areas might be used for aquaculture in case landowner wants such development. In that case, such borrow area will be photographed after their post use restoration and Environment Expert of Supervision Consultant will certify the post use redevelopment.
- The Contractor will keep record of photographs of various stages i.e., before using materials from the location (pre-project), for the period borrowing activities (construction Phase) and after rehabilitation (post development), to ascertain the pre and post borrowing status of the area.

### Appendix 5: Environmental Management Plan

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
	<b>Measures common to all sample roads</b>						
	<b>Design and Pre Construction Stage</b>						
1.	Climate Change Consideration and Vulnerability screening	<ul style="list-style-type: none"> <li>Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required</li> <li>Efforts shall be made to plant additional trees for increasing the carbon sink. The tree may be planted with help of PRI (Panchyati Raj Institution)</li> </ul>	All through the alignment of each rural road	Pre Construction Phase	Part of Project Cost	Project Preparation Consultant/ design consultant	PIU/ OSRRA
2.	Finalization of alignment	community structure.	o All through the alignment of each rural road	Pre Construction Phase	Part of Project Cost	Project Preparation Consultant/ design consultant	PIU/ OSRRA
3.	Land acquisition	<ul style="list-style-type: none"> <li>Avoid or minimize land acquisition.</li> <li>Land acquisition, compensation packages, resettlement and rehabilitation, poverty alleviation programs for affected people and all other related issues are addressed through Social Impacts and Resettlement &amp; Rehabilitation report.</li> </ul>			Land to be made available by the state Government		
4.	Biological environment - Tree planting	<ul style="list-style-type: none"> <li>All efforts shall be taken to avoid tree cutting wherever possible.</li> <li>Requisite permission from forest department shall be obtained for cutting of roadside trees.</li> <li>Provision of Compensatory Afforestation shall be made on 1:3 ratio basis.</li> <li>Permission shall be taken for diversion of any forest land if involved. Provision shall be made for additional compensatory tree plantation.</li> </ul>	Throughout the project section of the road. ( <i>Highlight Tree cutting locations &amp; proposed likely plantation location</i> )				
5.	Planning for land clearing	<ul style="list-style-type: none"> <li>The road land width shall be clearly demarcated on the ground.</li> <li>The utility and community structure shifting shall be planned in consultations and concurrence of the community.</li> <li>Tree felling shall be limited to those, which</li> </ul>	All through the Rural roads excepting in stretches of habitations ( <i>Attach or</i>	Pre Construct ion Phase Pre Construct ion Phase o All through the	Necessary cost provisions have been made. All other costs are included	PIC, PIU, Forest Department NGOs (shifting of utilities shall be carried out by	Environmental officer under the PIC will also coordinate and ensure implementation

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>could not be saved even by design measures. The tree shall be cut with a prior permission of Forest department.</p> <ul style="list-style-type: none"> <li>The vegetable cover shall be removed and disposed in consultation with community.</li> <li>All public utilities shifting shall be planned with prior concurrence of respective agencies/authority and to the adjacent location approved by them</li> </ul>	<i>Refer to specific sections of DPR for the utilities to be shifted along with chainages for the location of such structures)</i>	alignment of each rural road	under project cost.	<p>respective governmental bodies at cost to be reimbursed by project, implementing agency).</p> <p>To increase survival rate of new saplings, a core Tree Management Committee is to be created to ensure complete retrieval of vegetative cover and timely replacement of perished plantations.</p>	<p>Environmental officer under the PIC will coordinate and ensure Officials of Forest Department, Contractor and local NGOs and coordinated by Environmental officer of Construction Supervision Consultant for specific package. PIU, Govt. of Madhya Pradesh , and other</p>
6.	Shifting on Common Properties Resources	<ul style="list-style-type: none"> <li>All efforts are made to minimize shifting of common utilities and community structures.</li> <li>The community structures/utilities which can not be saved will be shifted to adjacent area with the concurrence and in consultation with community.</li> </ul>	As determined by contractor under approval of PIC /PIU ( <i>Attach or Refer to specific sections of DPR for community structures to be shifted along with chainages for the location of such structures)</i>	Construction Phase	Borne by Contractor	Contractor is responsible for ensuring provision of facilities under approval by PIC / PIU	<p>Environmental officer and other team members of PIC will monitor and ensure appropriate implementation</p> <p>Environmental officer will regularly interact with the local people who are likely to be affected to ensure that their interests are protected and no social resentment sets in. (PIU) of OSRRA,</p>
7.	Cut and Fill and	<ul style="list-style-type: none"> <li>The alignment design shall consider options to minimize excessive cuts and fills.</li> </ul>	All through the alignment of	Pre Construction Phase	PIU		

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
	Embankment Construction design & planning	<ul style="list-style-type: none"> <li>The cut and fill quantities shall be used for embankment to minimize borrow earth requirement.</li> <li>The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage.</li> <li>Adequate provision shall be made for cross drainage structure for maintaining natural drainage pattern in the subproject area and preventing soil erosion.</li> <li>Side drain for channelizing water to nearby natural drain in water stagnation /logging prone area.</li> <li>The top soil of the cut and fill area shall be used for embankment slope protection</li> <li>Embankment will be designed above High Flood Level (HFL) wherever, area is prone to flood.</li> </ul>	each rural road ( <i>Highlight the high flood level, chainage for action and linkages to DPR section</i> )				
8	Hydrology and Drainage	<ul style="list-style-type: none"> <li>Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly.</li> <li>Provision of adequate side drainage shall be made in water stagnant/logging areas.</li> <li>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.</li> <li>Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment to ensure minimum disturbance to natural drainage of surface and subsurface water of the area.</li> <li>Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides.</li> <li>Provision of concrete road construction in habitat area with drainage of both side of the road shall be made as per the design</li> </ul>					

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>provision and with adequate slope to prevent any water logging.</p> <ul style="list-style-type: none"> <li>Road level shall be fixed above HFL. Embankment slope stabilization measures shall be planned. Stabilization measures may include vegetative treatment, stone pitching, retaining wall where feasible, low cost options such as bamboo / eucalyptus tree pilling .</li> </ul>					
9	Establishment of Construction Camp, temporary	<ul style="list-style-type: none"> <li>Construction camp sites shall be located away from any local human settlements (minimum 0.5 km away) and preferably located on lands, which are not productive barren/waste lands presently.</li> <li>Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m).</li> <li>The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities.</li> <li>The construction camps shall be located at a minimum 0.5 km from forest land/areas to deter the construction labor in trespassing. Similarly, temporary office and storage areas shall be located at a minimum 0.5 km from forest land/areas.</li> <li>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.</li> <li>All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided completely to the extent possible.</li> <li>The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children.</li> <li>Personal Protective Equipments (PPEs) like helmet, boots, earplugs for workers, first aid</li> </ul>	Near all drainage crossing , nalas and river crossings etc. <i>(indicate HFL Level and Highlight the chainage for action and linkages to DPR section)</i>	stage under approval of PIC/PIU/ (ref- Labelled: WASTE OIL; and hazardous sign be displayed at oil handling areas and sold off to SPCB/ MoEF authorized rerefiners). <i>(Contractor to specify the cost provision made for PPE and other environmental / sanitation measures required per construction camp / temporary office /storage area)</i>	All facilities are to be planned and implemented by contractor under approval by PIU / PIC contractor's cost on and constructi on	As determined by contractor	PIU

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>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.</p> <ul style="list-style-type: none"> <li>Provision shall be made for domestic solid waste disposal in a control manner. The recyclable waste shall be sold off and non-saleable and biodegradable waste shall be disposed through secured land filling.</li> <li>Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.</li> </ul>					
10	Traffic Movement	<ul style="list-style-type: none"> <li>The contractor will identify the areas where temporary traffic diversion may be required. He would prepare appropriate traffic movement plan for ensuring continued flow of traffic during construction phase. This may include movement of the traffic from the site of the construction area. This kind of a temporary diversion shall be finalized with the concurrence of respective PIU.</li> <li>Wherever, cross drainage structure work require longer construction time and road is to be blocked for longer duration, the PIU / DPR Consultant shall define appropriate measures for traffic diversion before the start of the construction.</li> <li>The diversion plan should ensure smooth flow of traffic, minimize accidents to road users during construction works.</li> <li>Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and retro reflective in nature for good visibility in day and night both.</li> </ul>		As proposed under DPR and determined by contractor and approved by PIC/PIU/ <i>(Highlight the chainages which may require traffic diversions)</i>			
	11. Occupational Health and Safety	<ul style="list-style-type: none"> <li>Speed breakers (Rumble strips) as per IRC: 99-1988 shall be provided at sharp curves design and bends where the curve design speed is less than 40 km per hour in plain and rolling terrain.</li> <li>Speed breakers shall also be provided at a</li> </ul>				PIC /PIU/TSC Environmental officer and other team members of PIC will monitor	



SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m)</p> <ul style="list-style-type: none"> <li>The speed breakers shall be provided and directional sign boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required.</li> <li>Provision shall be made for Hazard markers at each end of all box culverts, river crossing causeways and similar CD structures</li> <li>Shoulder side slopes shall not be steeper than 2h:1V unless stone pitching of the slopes is provided.</li> <li>Cement concrete pavement and V-shaped drain shall be constructed to the full width of the available roadway within densely populated habitation and as per feasibility.</li> <li>Provision shall be made for Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road.</li> <li>It is proposed to approach railways for adequate safety at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both side of the railway crossing</li> </ul>				<i>(Highlight the location with chainage for such requirements)</i>	
	Construction Stage						
12.	Sourcing and transportation of construction material (aggregates , earth)	<p>Borrow Earth:</p> <ul style="list-style-type: none"> <li>The borrow earth shall be obtained from identified locations and with prior permission for landowner and clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed.</li> <li>Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying implementation of mitigation actions.</li> </ul>		PIU / OSRRA Design Consultant and Contractor Included in project cost During the Construct ion stage Thought out the road section <i>(The</i>			The selection of quarries and material selection will be the responsibility of contractor under approval of PIC /PIU/TSC Environmental officer and other team members of PIC will ensure appropriate

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<ul style="list-style-type: none"> <li>A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).</li> <li>Borrowing of earth will not be done continuously through out the stretch.</li> <li>Ridges of not less than 8m widths will be left at intervals not exceeding 300m.</li> <li>Small drains will be cut through the ridges, if necessary, to facilitate drainage.</li> <li>The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal).</li> <li>The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside.</li> <li>Fly ash will also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment.</li> <li>The borrow area shall be rehabilitated as per the understanding arrived with the land-owner. The re-habilitation plan may include the following: <ul style="list-style-type: none"> <li>Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover. If this is not possible, then excavation sloped will be smoothed and depression will be filled in such a way that it looks more or less like the original ground surface.</li> <li>Borrow areas might be used for aquaculture in case landowner wants such development.</li> </ul> </li> </ul> <p>Aggregate :</p> <ul style="list-style-type: none"> <li>The stone aggregate shall be sourced from existing licensed quarries</li> <li>Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIU.</li> <li>Topsoil to be stockpiled and protected for use at the rehabilitation stage</li> </ul> <p>Transportation of Construction Material</p> <ul style="list-style-type: none"> <li>Existing tracks / roads are to be used for</li> </ul>		contractor shall include the cost for the measures as part of the construction cost)			<p>Engineering cost During Design and constructi on Stage As Borrow sites and quarries (if required) location.</p> <p>(List the probable locations for borrow areas. (Highlight the Identified quarries, if already identified. Contractors should also indicate the quarry they are likely to use if not already identified at DPR stag) areas.</p>

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<ul style="list-style-type: none"> <li>hauling of materials to the extent possible.</li> <li>Prior to construction of roads, topsoil shall be preserved or at least shall be used for any other useful purposes like using in turfing of embankment rather than allowing its loss by construction activities.</li> <li>The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation. In any case, the transportation links are to be inspected at least twice daily to clear accidental spillage, if any.</li> </ul>					
13	Loss of Productive Soil, erosion and land use change	<ul style="list-style-type: none"> <li>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 back to land owner.</li> <li>The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes.</li> <li>It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion.</li> <li>o Cut and fill shall be planned as per IRC provisions and rural road manual.</li> <li>All steep cuts shall be flattened and benched.</li> <li>Shrubs shall be planted in loose soil area.</li> <li>IRC: 56 -1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration o</li> </ul> <p>Soil erosion shall be visually checked on slopes and embankment areas. In case soil erosion is found, suitable measures shall be taken to control the soil erosion</p>					<p>. PIU Design consultant and Contractor, Project preparati on cost and constructi on cost Design and constr uction stage Throughout the project section of the road s</p> <p><i>(The contractor shall include the cost for the measures as part of the construction cost)</i></p>
14	Compaction and Contamination of Soil	<ul style="list-style-type: none"> <li>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.</li> </ul>					<p>PIU</p> <ul style="list-style-type: none"> <li>Design consultant and Contractor, ng cost</li> </ul>

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<ul style="list-style-type: none"> <li>The productive land shall be reclaimed after construction activity.</li> <li>Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas.</li> <li>Domestic solid waste at construction camp shall be segregated into biodegradable and non-biodegradable waste.</li> <li>The non-biodegradable and recyclable waste shall be sold off.</li> <li>Fuel and lubricants shall be stored at the predefined storage location.</li> <li>The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils.</li> <li>All efforts shall be made to minimize the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal.</li> <li>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 SPCB/ MoEF authorized re-refiners.</li> </ul>					<ul style="list-style-type: none"> <li>Contractor</li> <li>PIU/ OSRRA</li> <li>Project preparation cost and construction cost</li> <li>Included in engineering Design and construction stage</li> <li>During Construction stage</li> <li>Throughout the project section of the road</li> <li>Near all drainage crossing ,nalas and rivercrossings etc.</li> </ul> <p><i>(The contractor shall include the cost for the measures as part of the construction</i></p>
15	Construction Debris and waste	<ul style="list-style-type: none"> <li>All excavated materials from roadway,shoulders, verges, drains, cross drainage will be used for backfilling embankments, filling pits, and landscaping.</li> <li>Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority.</li> <li>The bituminous wastes shall be disposed in secure manner at designated landfill sites only in an environmentally accepted manner.</li> <li>For removal of debris, wastes and its</li> </ul>					

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>disposal MOSRTH guidelines should be followed. Unproductive/wastelands shall be selected with the consent of villagers and Panchayat for the same. The dumping site should be of adequate capacity. It should be located at least 500 m away from the residential areas.</p> <ul style="list-style-type: none"> <li>Dumping sites should be away from water bodies to prevent any contamination of these bodies.</li> </ul>					
16	Air and Noise Quality	<ul style="list-style-type: none"> <li>Vehicles delivering loose and fine materials like sand and aggregates shall be covered.</li> <li>Dust suppression measures like water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas.</li> <li>Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements.</li> <li>Material storage areas shall also be located downwind of the habitation area.</li> <li>Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by SPCB to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State</li> <li>Pollution Control Board and comply with all consent conditions.</li> <li>Diesel Generating (DG) sets shall also be fitted with stack of adequate height ( as per regulation height of the stack of open to air DG set shall be about 0.5 m for 5 KVA and about 0.7 m for 10 KVA DG sets, above top of sound proofing enclosure of the Dg set). . Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained.</li> <li>The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to</li> </ul>					<p>OSRRA PIU and OSRRA Part of engineering construction cost</p> <p>Contractor, PIC/PIU work cost included during the design and Construction stage construction stage</p> <p>cost) Throughout the project section of the road (Highlight Tree cutting locations &amp; proposed likely plantation location) Throughout the project section of the road (The contractor shall include the cost for this)</p>

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		<p>the construction workers.</p> <ul style="list-style-type: none"> <li>Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly.</li> </ul>					
17	Biological environment - Tree planting	<ul style="list-style-type: none"> <li>Compensatory Afforestation shall be made on 1:3.ratio basis as per the plannings.</li> <li>Additional trees shall be planted wherever feasible</li> </ul>	Throughout the project section				
18	Ground Water and Surface Water Quality and Availability	<ul style="list-style-type: none"> <li>Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority if applicable.</li> <li>The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected.</li> <li>Water intensive activities shall not be undertaken during summer period to the extent feasible.</li> <li>Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible</li> <li>Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall intensity.</li> <li>Preventive measures like slop stabilisation, etc shall be taken for prevention of siltation in water bodies.</li> </ul>					
19.	Occupational Health and Safety	<ul style="list-style-type: none"> <li>Verification of implementation of provision made at planning stage.</li> <li>Each worker is provided with requisite PPE</li> <li>Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road.</li> </ul>					
	Operation Stage						
20.	Air and Noise Quality	<ul style="list-style-type: none"> <li>Awareness sign board shall be provided for slow driving near the habitat areas to minimize dust generation due vehicle movement.. Speed limitation and honking restrictions may be enforced near sensitive</li> </ul>	Throughout the project section at the location determined by contractor and	stage Operation stage	construction cost	Contractor, PIC/PIU	

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		locations.	approved by PIU  <i>(The contractor shall include the cost for the measures as part of the construction)</i>				
21	Site restoration	<ul style="list-style-type: none"> <li>All construction camp/temporary office/material storage areas are to be restored to its original conditions.</li> <li>The borrow areas rehabilitation will be ensured as per the agreed plan with the landowner.</li> <li>Obtained clearance from PIU before handing over the site to SRRDA.</li> <li>PIC to undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU	Contractor, PIC/PIU construction cost construction cost  Contractor, PIC/PIU	Operation stage		
22.	Hydrology and Drainage	<ul style="list-style-type: none"> <li>Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season.</li> <li>Rejuvenation of the drainage system by removing encroachments/ congestions shall be regularly conducted</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU				
23	Occupational Health and Safety	<ul style="list-style-type: none"> <li>Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road</li> </ul>					

Note :

1. Road specific measures may vary depending on its location and environmental setting around. The exact extent of activities and related measures requires will depend on final alignment selection. Table 1 provides the list of common utilities, ponds, or community structures falling within 2-4 M of the road and may require shifting. Efforts shall be made to adopt the mitigative measures listed under respective section above including measures of aligning road on one end to save the the structures/trees as much as possible. The PIU will update this EMP before attaching it with the DPR and either list or refer to the section of DPR for highlighting the exact location with chainage of action areas (regarding shifting of common utilities, community structures, location of CD structures, embankment height in the flood prone areas, slope stabilization measures with locations near ponds or water

SL. No.	Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
bodies, tree cutting locations)							
2. The information to be updated in the standard EMP before attaching it with DPR is highlighted under location column of the standard EMP.							



## Appendix 6: Environmental Monitoring Plan

### I. ENVIRONMENTAL MONITORING DURING DESIGN AND PRE-CONSTRUCTION STAGE

Monitoring Responsibility: PIU with Support from PIC

Monitoring Frequency: Once prior to start of construction

Road Name with Block and District Name: .....

Road Length: .....

Report No.: XXX.

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance Status	Corrective action proposed in case of delay
	Climate Change Consideration and Vulnerability screening	<ul style="list-style-type: none"> <li>Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required</li> <li>Efforts shall be made to plant additional trees for increasing the carbon sink. The tree may be planted with help of PRI ( Panchyati Raj Institution)</li> </ul>	All through the alignment	No. of Additional Tree plantation Proposed		
	Finalization of alignment	<ul style="list-style-type: none"> <li>The road will be part of district core network and will comply with PMGSY guidelines</li> <li>Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.</li> <li>Subproject will not pass through any designated wildlife sanctuaries, national park, notified Eco sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area..</li> <li>Subproject to comply with local and National legislative requirements such as forest clearance for diversion of forestland and ADB's Safeguard Policy Statement 2009.</li> <li>Alignment finalization considering availability of right of way and in consultation with local people.</li> <li>ROW may be reduced in built up area or constricted areas to minimize land acquisition as per PMGSY Guidelines.</li> <li>Adjust alignment to the extent feasible to of utilities or community structure.</li> <li>The road shall follow natural topography to avoid excessive cut and shifting Report No.: XXX.</li> </ul>	All through the alignment of each rural road	Compliance to Conditions of Forest Clearance if applicable		
	Land acquisition	<ul style="list-style-type: none"> <li>Avoid or minimize land acquisition.</li> <li>Land acquisition, compensation packages, resettlement and</li> </ul>	All through the alignment of each rural road			

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance Status	Corrective action proposed in case of delay
		<p>rehabilitation, poverty alleviation programs for affected people and all other related issues are addressed through Social Impacts and Resettlement &amp; Rehabilitation report.</p> <ul style="list-style-type: none"> <li>Avoid tree cutting</li> </ul>				
	Biological environment - Tree planting	<ul style="list-style-type: none"> <li>All efforts shall be taken to avoid tree cutting wherever possible.</li> <li>Requisite permission from forest department shall be obtained for cutting of roadside trees.</li> <li>Provision of Compensatory Afforestation shall be made on 1:3.ratio basis.</li> <li>Permission shall be taken for diversion of any forest land if involved. Provision shall be made for additional compensatory tree plantation.</li> </ul>	Throughout the project section of the road			
	Planning for land clearing	<ul style="list-style-type: none"> <li>The road land width shall be clearly demarcated on the ground.</li> <li>The utility and community structure shifting shall be planned in consultations and concurrence of the community.</li> <li>Tree felling shall be limited to those, which could not be saved even by design measures. The tree shall be cut with a prior permission of Forest department.</li> <li>The vegetable cover shall be removed and disposed in consultation with community.</li> <li>All public utilities shifting shall be planned with prior concurrence of respective agencies/authority and to the adjacent location approved</li> <li>Side drain for channelizing water to nearby natural drain in water stagnation /logging prone area.</li> <li>The top soil of the cut and fill area shall be used for embankment slope protection</li> <li>Embankment will be designed above High Flood Level wherever, area is prone to flood.</li> </ul>	All through the Rural roads excepting in stretches of habitations	<p>Tree cutting permission from Forests or Revenue department as applicable</p> <p>Permission of concerned utility Authorities No and proposed location of compensatory trees plantation, Concurrence from community for utility, community structure, and vegetation cover removal</p>		
	Shifting on Common Properties Resources	<ul style="list-style-type: none"> <li>All efforts are made to minimize shifting of common utilities and community structures.</li> <li>The community structures/utilities which can not be saved will be shifted to adjacent area with the concurrence and in consultation fill. by them with community.</li> </ul>	As determined by contractor under approval of PIC /PIU			
	Cut and Fill and Embankment Construction design and	<ul style="list-style-type: none"> <li>The alignment design shall consider options to minimize excessive cuts and fills.</li> <li>The cut and fill quantities shall be used for embankment to minimize borrow earth requirement.</li> </ul>	All through the alignment of each rural road			

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance Status	Corrective action proposed in case of delay
	planning	<ul style="list-style-type: none"> <li>The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage.</li> <li>Adequate provision shall be made for cross drainage structure for sign be maintaining natural drainage pattern in the subproject area and preventing soil erosion.</li> </ul>				
	Hydrology and Drainage	<ul style="list-style-type: none"> <li>Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly.</li> <li>Provision of adequate side drainage shall be made in water stagnant/logging areas.</li> <li>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.</li> <li>Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment to ensure minimum disturbance to natural drainage of surface and subsurface water of the area.</li> <li>Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides.</li> <li>Provision of concrete road construction in habitat area with drainage of both side of the road shall be made as per the design provision and with adequate slope to prevent any water logging.</li> <li>Road level shall be fixed above HFL. Embankment slope stabilization measures shall be planned. Stabilization measures may include vegetative treatment, stone pitching, retaining wall where feasible, low cost options such as bamboo / eucalyptus tree</li> </ul>	Near all drainage crossing , nalas and rivercrossings etc.			
	Establishment of Construction Camp, temporary office and storage area	<ul style="list-style-type: none"> <li>Construction camp sites shall be located away from any local human settlements (minimum 0.5 km away) and preferably located on lands, which are not productive barren/waste lands presently.</li> <li>Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m).</li> <li>The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite pilling . control board for setting up the camp. infrastructure facilities.</li> <li>The construction camps shall be located at a minimum 0.5 km from forest land/areas to deter the construction labor in trespassing. Similarly, temporary office and storage areas shall be located at a</li> </ul>	As determined by contractor under approval of PIC/PIU/ (ref- Labelled: WASTE OIL; and hazardous	Location of Construction camp with planning of requisite facilities and making provision of such facilities prior to start of construction. Availability of consent to		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance Status	Corrective action proposed in case of delay
		<p>minimum 0.5 km from forest land/areas.</p> <ul style="list-style-type: none"> <li>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.</li> <li>All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided completely to the extent possible.</li> <li>The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children.</li> <li>Personal Protective Equipments (PPEs) like 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.</li> <li>Provision shall be made for domestic solid waste disposal in a control manner. The recyclable waste shall be sold off and non-saleable and biodegradable waste shall be disposed through secured land filling.</li> <li>Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.</li> </ul>		establish from pollution		
	Traffic Movement	<ul style="list-style-type: none"> <li>The contractor will prepare appropriate traffic diversion scheme approved by respective PIU. This shall be implemented prior to start of construction to avoid any inconvenience to the present road users. This shall be implemented in other stretches of the road as per the progress of the construction work.</li> <li>The diversion plan should ensure smooth flow of traffic, minimize accidents to road users during construction works.</li> <li>Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and retro reflective in nature for good visibility in day and night both.</li> </ul>	As proposed under DPR and determined by contractor and approved by PIC/PIU/	Each Sample road once.		
	Occupational Health and Safety	<ul style="list-style-type: none"> <li>Speed breakers (Rumble strips) as per IRC: 99-1988 shall be provided at sharp corves design and bends where the curve design speed is less than 40 km per hour in plain and rolling terrain.</li> <li>Speed breakers shall also be provided at a threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m) through habitation.</li> <li>The speed breakers shall be provided and directional sign boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required.</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU			

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance Status	Corrective action proposed in case of delay
		<ul style="list-style-type: none"> <li>Provision shall be made for Hazard markers at each end of all box culverts, river crossing causeways and similar CD structures</li> <li>Shoulder side slopes shall not be steeper than 2h:1V unless stone pitching of the slopes is provided.</li> <li>Cement concrete pavement and V-shaped drain shall be constructed to the full width of the available roadway within densely populated habitation and as per feasibility.</li> <li>Provision shall be made for Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'Tintersection' warning sign shall be installed on the village road.</li> <li>It is proposed to approach railways for adequate safety at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both side of the railway crossing</li> </ul>				
	Grievance Redress	<ul style="list-style-type: none"> <li>Obtaining information from Village level Grievance redress committee, PIU as applicable</li> </ul>				

## II. ENVIRONMENTAL MONITORING DURING CONSTRUCTION STAGE

Monitoring Responsibility : PIU with Support from PIC

Monitoring Frequency : (First Report after third month of start of construction or 25% construction . Second report after ninth month of construction or 75% construction)

Project Details:.....

Road stretch name:.....

Monitoring Report Quarter No.:.....

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
1	Sourcing and transportation of construction material ( aggregates , earth)	<ul style="list-style-type: none"> <li>Borrow Earth:</li> <li>The borrow earth shall be obtained from identified locations and with prior permission for landowner and clear understanding for</li> <li>its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed.</li> <li>Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying areas.</li> <li>A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical:Horizontal).</li> <li>Borrowing of earth will not be done continuously through out the stretch.</li> <li>Ridges of not less than 8m widths will be left at intervals not exceeding 300m.</li> <li>Small drains will be cut through the ridges, if necessary, to facilitate drainage.</li> <li>The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal).</li> <li>The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside.</li> <li>Fly ash will also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment.</li> <li>The borrow area shall be rehabilitated as per the</li> </ul>	At Borrow sites and quarries (if required) location.	<p>Compliance to IRC guidelines and stated criteria, Permission from land owners, Rehabilitation of borrow areas</p> <p>Availability of valid consent of quarries</p>		

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		<p>understanding construction). Thought out the road section arrived with the land-owner. The rehabilitation plan may include the following:</p> <ul style="list-style-type: none"> <li>Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover . If this is not possible, then excavation sloped will e smoothed and</li> <li>depression will be filled in such a way that it looks more or less like the original ground surface.</li> <li>Borrow areas might be used for aquaculture in case landowner wants such development.</li> </ul> <p>Aggregate :</p> <ul style="list-style-type: none"> <li>The stone aggregate shall be sourced from existing licensed quarries</li> <li>Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIU.</li> <li>Topsoil to be stockpiled and protected for use at the rehabilitation stage</li> </ul> <p>Transportation of Construction Material</p> <ul style="list-style-type: none"> <li>Existing tracks / roads are to be used for hauling of materials to the extent possible. Prior to construction of roads, topsoil shall be preserved or at least shall be used for any other useful purposes like using in turfing of embankment rather than allowing its loss by construction activities.</li> <li>The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation. In any case, the transportation links are to be inspected at least twice daily to clear accidental spillage, if</li> </ul>				
		<ul style="list-style-type: none"> <li>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 back to land owner.</li> <li>The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes.</li> </ul>	<p>□ Throughout the project section of the road s</p>			

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		<ul style="list-style-type: none"> <li>• It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion.</li> <li>• Cut and fill shall be planned as per IRC provisions and rural any. Loss of Productive Soil, erosion and land use change</li> <li>• All steep cuts shall be flattened and benched.</li> <li>• Shrubs shall be planted in loose soil area.</li> <li>• IRC: 56 -1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration.</li> <li>• Soil erosion shall be visually checked on slopes and embankment areas. In case soil erosion is found, suitable measures shall be taken to control the soil erosion</li> </ul>				
	Compaction and Contamination of Soil	<ul style="list-style-type: none"> <li>• 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.</li> <li>• The productive land shall be reclaimed after construction activity.</li> <li>• Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas.</li> <li>• Domestic solid waste at construction camp shall be segregated into biodegradable and non-biodegradable waste.</li> <li>• The non-biodegradable and recyclable waste shall be sold off.</li> <li>• Fuel and lubricants shall be stored at the predefined storage location.</li> <li>• The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils.</li> <li>• All efforts shall be made to minimize the waste generation.</li> <li>• Unavoidable waste shall be stored at the designated place prior to disposal.</li> </ul> <p>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</p>	Throughout the project section of the road road manual			



SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to SPCB/ MoEF authorized rerefiners.				
4.	Construction Debris and waste	<ul style="list-style-type: none"> <li>All excavated materials from roadway, shoulders, verges, drains, cross drainage will be used for backfilling embankments, filling pits, and landscaping.</li> <li>Unusable debris material should be suitably disposed off at predesignated disposal locations, with approval of the concerned authority.</li> <li>The bituminous wastes shall be disposed in secure manner at designated landfill sites only in an environmentally accepted manner.</li> <li>For removal of debris, wastes and its disposal MOSRTH guidelines should be followed. Unproductive/wastelands shall be selected with the consent of villagers and Panchayat for the same. The dumping site should be of adequate capacity.</li> <li>It should be located at least 500 m away from the residential areas. Dumping sites should be away from water bodies to prevent any contamination of these bodies.</li> </ul>				
5.	Air and Noise Quality	<ul style="list-style-type: none"> <li>Vehicles delivering loose and fine materials like sand and aggregates shall be covered.</li> <li>Dust suppression measures like water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas.</li> <li>Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements.</li> <li>Material storage areas shall also be located downwind of the habitation area.</li> <li>Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by SPCB to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State Pollution Control Board and comply with all consent conditions.</li> </ul>	Near all drainage crossing, nalas and river crossings etc.			

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		<ul style="list-style-type: none"> <li>Diesel Generating (DG) sets shall also be fitted with stack of adequate height ( as per regulation height of the stack of open to air DG set shall be about 0.5 m for 5 KVA and about 0.7 m for 10 KVA DG sets, above top of sound proofing enclosure of the Dg set). . Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained.</li> <li>The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to the construction workers.</li> <li>Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly.</li> </ul>				
6.	Biological environment - Tree planting	<ul style="list-style-type: none"> <li>Compensatory Afforestation shall be made on 1:3.ratio basis as per the plannings.</li> <li>Additional trees shall be planted wherever feasible.</li> </ul>	Throughout the project section of the road			
	Ground Water and Surface Water Quality and Availability	<ul style="list-style-type: none"> <li>Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority if applicable.</li> <li>The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected.</li> <li>Water intensive activities shall not be undertaken during summer period to the extent feasible.</li> <li>Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible</li> <li>Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall intensity.</li> <li>Preventive measures like slop stabilisation, etc shall be taken for prevention of siltation in water bodies.</li> </ul>	Throughout the project section of the road			
7.	Occupational Health	<ul style="list-style-type: none"> <li>Verification of implementation of provision made at planning stage.</li> </ul>	Throughout the project section			
8.	and Safety	<ul style="list-style-type: none"> <li>Each worker is provided with requisite PPE</li> </ul>				

SL. NO.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		<ul style="list-style-type: none"> <li>Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'Tintersection'warning sign shall be installed on the village road.</li> </ul>	at the location determined by contractor and approved by PIU			
9.	Grievance Redress	<ul style="list-style-type: none"> <li>Obtaining information from Village level Grievance redress committee, PIU as applicable</li> </ul>	Each Sample road once.			

**NOTE: Each report must enclose Photograph to the maximum possible action points, even if work is in progress.**

### III. ENVIRONMENTAL MONITORING DURING OPERATION STAGE

Monitoring Responsibility: PIU with Support from PIC

Monitoring Frequency: On completion of construction and after one month of first and second year of maintenance period

Project Details :XXXXX.

Road Stretch Name: XXX.

Monitoring Report No.: XX..

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
1.	Air and Noise Quality	<ul style="list-style-type: none"> <li>Awareness sign board shall be provided for slow driving near the habitat areas to minimize dust generation due vehicle movement.. Speed limitation and honking restrictions may be enforced near sensitive locations.</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU			
2.	Site restoration	<ul style="list-style-type: none"> <li>All construction camp/temporary office/material storage areas are to be restored to its original conditions.</li> <li>The borrow areas rehabilitation will be ensured as per the agreed plan with the landowner.</li> <li>Obtained clearance from PIU before handing over the site to SRRDA.</li> <li>PIC to undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required</li> </ul>	Throughout the road stretch	Survivability report, land owner concurrence of land reversal		
	Hydrology and Drainage	<ul style="list-style-type: none"> <li>Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season.</li> <li>Rejuvenation of the drainage system by removing encroachments/ congestions shall be regularly conducted</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU			
3.	Road Safety	<ul style="list-style-type: none"> <li>Directional sight board shall be installed on all sharp curves and bends</li> <li>At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road.</li> </ul>	Throughout the project section at the location determined by contractor and approved by PIU	Monitor road crashes and compile. Estimate no. crashes vs number of vehicles passing section and		

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
				compare with applicable national standards for blackspots		
4.	Grievance Redress	<ul style="list-style-type: none"> <li>Obtaining information from Village level Grievance redress committee, PIU as applicable</li> </ul>	Each Sample road once.			

NOTE: Each report must enclose Photograph to the maximum possible action points, even if work is in progress.