

# Environmental Monitoring Report

---

# 3 Semestral Report  
April 2015

## IND: Railway Sector Investment Program – Tranche 1

Prepared by Ministry of Railways for the Government of India and the Asian Development Bank.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

Indian Government  
Ministry of Railways  
Asian Development Bank

Multitranche Financing Facility No. 0060-IND  
Loans No. 2793-IND, 3108-IND  
Railway Sector Investment Program  
Track Doubling and Electrification on Critical Routes

Environmental Monitoring Report  
Semi Annual Report: April 2014 - September 2014



**Document Identification**

Project Name :	Railway Sector Investment Program
	ADB MFF no. 0060-IND
	ADB Loans no. 2793-IND, 3108-IND
	Track Doubling and Electrification on Critical Routes
Report Name :	GENERAL CONSULTANT Half yearly Environmental Report No.3, September 2014
Reference	EMP_September 2014

**Preparation, Review and Authorisation**

Prepared by :	Dr. Surjit Singh Deepak	Signature :
Organisation :	General Consultant	
Position :	Environment Expert	Date :

Checked by :	Prem Narayan Shukla / Jean-Francois Pinet	Signature :
Organisation :	General Consultant	
Position :	Dy. Team Leader/ Team Leader	Date :

Reviewed by :	Ramashray Pandey	Signature :
Organisation :	RVNL	
Position :	General Manager/Corporate Coordination	Date :

Approved by :	Vijay Anand	Signature :
Organisation :	RVNL	
Position :	Director Projects	Date :

**Revision, Preparation, Review Issue**

Revision	Date	Subject	Prepared by	Reviewed by

## Contents

Executive Summary.....	1
1. Project background.....	2
2. The environmental category of the projects.....	5
3. Scope of the present report .....	6
4. Approach and methodology adopted for environmental monitoring of the projects.....	6
5. Environmental Monitoring Performance .....	7
5.1. Compliance with loan covenants, state and national statutes & regulations .....	7
5.2. Compliance with the Environmental Management Plan.....	24
5.2.1. Compliance with EMP Implementation at Construction and Plant sites: .....	24
5.2.2. Compliance with safety requirements at site:.....	24
5.2.3. Compliance with EMP Implementation at quarry site and Borrow Areas: .....	24
5.2.4. Workers/Labour Camps:.....	24
5.2.5. Health check-up and AIDS awareness for workers:.....	25
5.2.6. Mobilisation of PMC's and contractors environmental personnel: .....	25
5.2.7. Public complaints on environmental and safety issues of project:.....	25
5.3. Environmental Performance Rating.....	25
5.4. Significant Non-Compliances .....	28
5.5. Monitoring of environmental quality attributes.....	28
5.6. Any additional environmental issues and impact observed during implementation which were not covered earlier in IEE.....	44
5.7. Environmental Enhancement Measures.....	44
6. Conclusions.....	45
Annexure I: Photographs .....	46

## Tables

Table 1: List of projects.....	4
Table 2: Compliance status with Loan Covenants .....	10
Table 3: Packagewise status of Compliance with state and national statutes & regulations .....	23
Table 4: Performance rating on Compliance with the Environmental Management Plan.....	28
Table 5: Status of Monitoring of Environmental Attributes during last 6 months .....	31
Table 6: Packagewise Ambient Air Quality at different locations.....	34
Table 7: Noise monitoring results of different construction packages.....	43

## Abbreviations

ADB	Asian Development Bank
AIDS	Acquired Immuno Deficiency Syndrome
CtE	Consent to Establish
CtO	Consent to Operate
DFO	Deputy Forest Officer
EMP	Environmental Management Plan
FFA	Framework Financing Agreement
GC	General Consultant
GoI	Government of India
HIV	Human Immunodeficiency Virus
IA	Implementing Agency
IEE	Initial Environmental Examination
IPP	Indigenous Peoples Plan
MFF	Multitranchise Financing Facility
MoR	Ministry of Railways
MoEF	Ministry of Environment and Forest
NOC	No Objection Certificate
PMC	Project Management Consultant
RP	Resettlement Plan
RSIP	Railway Sector Investment Program
RVNL	Rail Vikas Nigam Limited
SPS	Safeguard Policy Statement
STD	Sexually Transmitted Diseases

## Executive Summary

This report is the third semi-annual report on environmental safeguards compliance of the five projects under the Railway Sector Investment Program (RSIP) under Multitranche Financing Facility. They cover Track Doubling and Electrification on Critical Routes in India. The present report is a summary of EMP implementation in the different construction packages. The reporting period is from April to September 2014.

The five projects under RSIP are:

1. Doubling of Daund - Gulbarga
2. Doubling of Sambalpur - Titlagarh
3. Doubling of Raipur - Titlagarh
4. Doubling of Hospet - Tinaighat
5. Electrification of Pune - Wadi - Guntakal

The above projects have been divided into a total number of 17 construction packages out of which contracts have been awarded for 15 packages and activities are progressing in all the awarded construction packages except one. The contract package RT-2 (Titlagarh-Lakhana section of Raipur-Titlagarh Doubling Project) has been terminated due to non performance of the Contractor.

The environmental safeguards in all the construction packages have been implemented in compliance with the loan covenants, subproject selection criteria and overall Environmental EMP. In general, all the contractors of 14 construction packages where work is in progress, are complying with most of the proposed mitigation measures described in Environmental Management Plan and the contract specification.

There is overall improvement in implementation of environmental safeguards in all the construction packages. The periodical monitoring of environmental attributes such as ambient air quality, water quality and noise level monitoring has been started as per environmental monitoring plan. HIV/AIDS awareness and health camps have been organized from time to time in compliance to the contract requirements. The PMCs of all the packages have mobilized Environmental Officers to ensure monitoring of environmental compliance at different work sites.

There were no significant environmental impacts observed during the reporting period of the ongoing construction of above projects. However, emphasis has been given to continual improvement in the performance of EMP implementation including periodical informal and formal training on environmental and safety issues.

## 1. Project background

Ministry of Railways (MoR), Government of India (GoI) has sought financial assistance from the Asian Development Bank (ADB) under Railway Sector Investment Program (RSIP) for up-gradation (doubling) of existing four numbers of single Railway line. In addition, there is also electrification of one existing railway line under RSIP. The total track km involved in above works is about 1500 kms and spread across the states of Maharashtra, Karnataka, Andhra Pradesh, Chhattisgarh and Odisha.

The main objective of the RSIP is to augment the capacity of existing single lines which are not able to cater the traffic needs of the area. The above railway lines are critical for bulk freight transport of various commodities particularly in the region and in the country in general. The impact of project on its implementation with modern signaling system would improve the overall infrastructure in the region and increase the capacity and the operational efficiency of the existing tracks.

A Framework Financing Agreement (FFA) was signed on 8<sup>th</sup> July 2011 between Government of India through the Ministry of Railways (MOR) and ADB for the implementation of the RSIP.

The total cost of RSIP covered by this framework agreement is expected to be 1,144.6 million USD, out of which 500 million USD (43.7%) will be financed by ADB and remaining 644.6 million USD by India.

A Multi tranche Financing Facility (MFF) has been approved by ADB on 31 August 2011 to finance the individual projects under RSIP.

It covers 3 components:

- (i) Railway improvement component will cover doubling of track about 840 km rail routes and electrification over the 640 km rail route along high density corridors.
- (ii) Efficiency enhancement component will provide equipment and implementation support to the institution strengthening action plan, especially focusing on implementation of the new accounting systems in synchronization with the Government Accounting Standards Advisory Board.
- (iii) Clean Development Mechanism (CDM) component will provide implementation support to MOR for carbon mitigation.

Rail Vikas Nigam Limited (RVNL) is Implementing Agency (IA) for component (i), while MOR acts as IA for components (ii) and (iii).



The location of the projects is shown as red and blue in the map (Figure 1) here under:

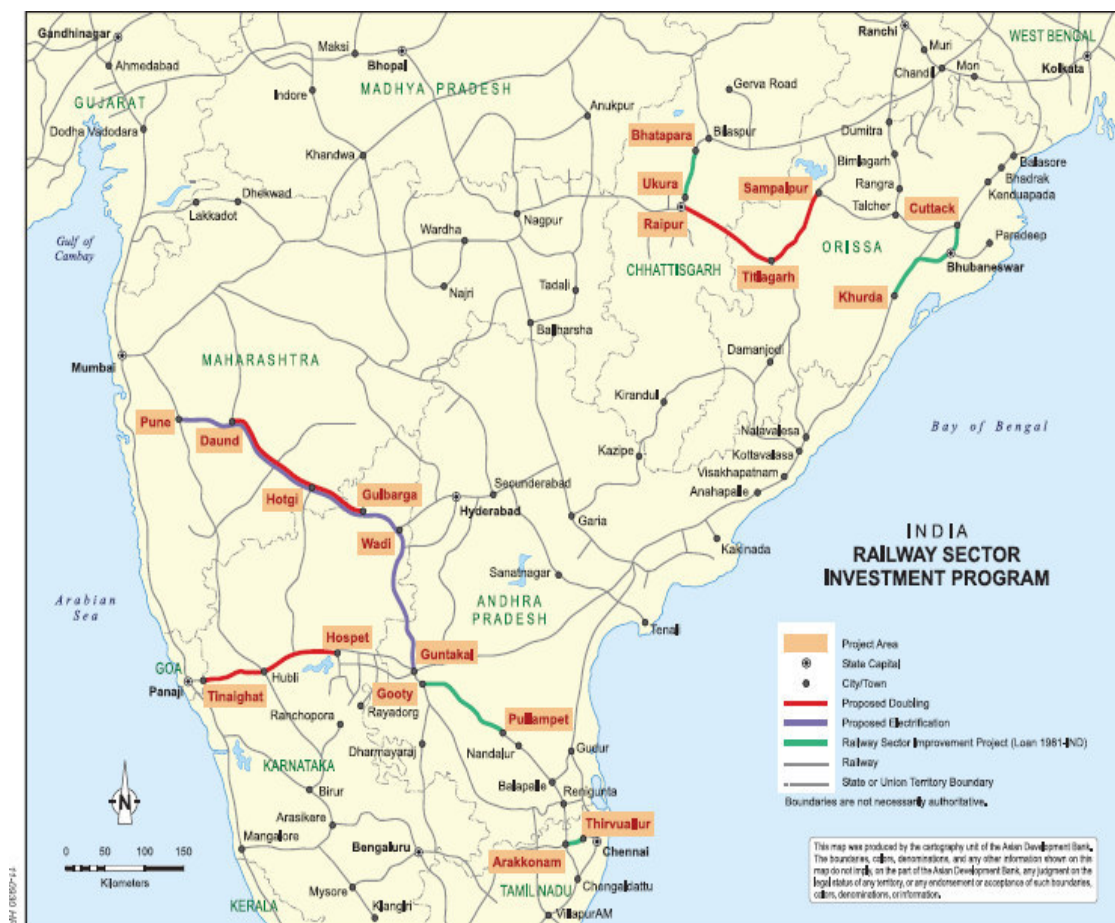


Figure 1: Map of India showing Track Doubling and Electrification Projects



The following Railway projects are part of the Railway Improvement Component:

No.	Project Name	Length (km)	Subproject	Location
i.	Doubling of Daund - Gulbarga	224	DG-1: Bhigwan-Mohol DG-2: Hotgi-Gulbarga	Maharashtra, Karnataka, and Andhra Pradesh
ii.	Doubling of Sambalpur - Titlagarh	182	ST-1: All Major Bridges ST-2: Sambalpur-Barapali ST-3: Barapali-Bolangir ST-4: Bolangir-Titlagarh	Odisha
iii.	Doubling of Raipur - Titlagarh	203	RT-1: Titlagarh-Lakhana RT-2: Lakhana-Arand RT-3: Arand-Raipur	Odisha & Chhattisgarh
iv.	Doubling of Hospet – Tinaighat	229	HT-1: Hospet-Hariapur HT-2: Harlapur-Dharwar HT-3: Kambarganavi-Tinaighat	Karnataka
v.	Electrification of Pune - Wadi - Guntakal	641	PG-1: Pune-Bhigwan & Gulbarga-Wadi PG-2: Wadi-Raichur PG-3: Raichur-Guntakal PG-4: Bhigwan-Mohol PG-5: Mohol-Gulbarga	Maharashtra, Karnataka, and Andhra Pradesh

**Table 1: List of projects**

The scope of projects (i) to (iv) above is to provide a second line along the existing single line by constructing the roadbed and either extending or constructing new bridges, providing of facilities for passenger and staff, providing and laying track, signalling and telecommunications and general electrical works. For project at serial number (v) the scope of the project is to provide overhead Railway electrification in the Pune – Wadi – Guntakal double line section.

The key project activities involved are laying of formation for double track, construction of new bridges including Rail under Bridges and Rail over Bridges. Other important activities are:

- Gradient and curve improvement,
- Construction of side drains,
- Shifting of existing roads at certain locations and construction of approach roads near bridge locations,
- Dismantling, renovating (levelling, extension, up-gradation) or new construction of platforms,
- Dismantling/ construction of foot over bridges,
- Dismantling /building of loops,
- Construction of quarters for staffs with all basic amenities.
- Temporary workshops, offices and construction camps.

The construction contracts have been awarded for 15 packages. Works are in progress for 14 packages whereas for one construction package the contract has been terminated due to non performance of the contractor. From those 14, 3 have been awarded in March 2014 and are in mobilisation phase. The award of the contracts for packages PG-4 and PG-5 of Electrification of Pune - Wadi - Guntakal project are planned in first quarter 2015.

In addition to the above mentioned works packages, the ADB loan also covers the following:

- The supply of rails and thick web switches;
- The supply and installation of indoor signalling;
- General consultancy services for the whole program.

## **2. The environmental category of the projects**

The 5 projects fall under B category as per ADB categorization criteria based on ADB's Environmental Assessment Guidelines 2003, and Safeguard Policy Statement (SPS) 2009. The projects required only IEE for meeting the environmental requirements under the ADB's policy. IEE reports were prepared for all five projects and based on the findings of the study with respect to the anticipated environmental impacts, Environmental Management Plan (EMP) has been formulated for mitigating and managing the anticipated adverse environmental impacts and enhancing the efficiency of environmental components wherever it is possible. The recommended EMP was included in domain of detailed design and bid documents for all the sub-projects. There is a separate budgetary allocation for implementation of EMP included in the contracts.

### **3. Scope of the present report**

This report presents the status of environmental safeguards compliance with respect to each project, for the period from April, 2014 to September, 2014. Information presented in this report is mainly based on observations made during field inspections jointly carried out by the employer (RVNL), the engineer (PMC) and the contractor, and general audit inspections by the General Consultant (GC).

The report reviews the compliance of environmental activities set in EMP during the period and proposes practices/innovations leading to improved and sustainable environment in the future.

### **4. Approach and methodology adopted for environmental monitoring of the projects**

The direct responsibility for implementing environmental safeguards at site during construction lies primarily with the contractors. For ensuring effective implementation of environmental safeguards and monitoring the compliances, RVNL has appointed a Project Management Consultant (PMC) for each construction package with supervisory role on works along with monitoring of compliance of environmental safeguard measures by the contractor.

RVNL has also appointed General Consultant (GC) to monitor the overall progress of the projects including performance of safeguard measures related to environmental protection and to provide necessary guidance/training on EMP implementation to local Contractors, PMCs & RVNL supervisory staff. The GC has supplied guidelines to field people dealing with project to help them understand their obligation to exercise due diligence for environmental matters. Further, seeing complexity of the project involving multiple sites, GC has developed a range of EMP formats to facilitate use in the field and provide practical and accessible information of each stage of the project.

The EMP defines details of who, what, where and when environmental management and mitigations measures are to be implemented. Also, it specifically covers monitoring of components such as ambient air quality, water quality and noise levels etc. The EMP and EMoP are project specific plans developed for each project to ensure that environmental practices are followed during construction. Both plans have been included the contract agreement under section 5 – ‘work requirements’ of each contractor executing the project.

At site, inspection and monitoring of environmental activities with corrective actions are undertaken by the PMC on regular basis. Register, reports and form are maintained by PMC as under:

1. Site inspection checklist
2. Non compliance and corrective action report
3. Environmental and safety training register
4. Environmental incident and site accident reports

Various checklists and templates are being used by PMC for maintaining and reporting activities for different level of information including follow up action related to environmental control and

procedures. The contractor submits monthly report of environmental activities/compliances including environmental awareness training etc to PMC and RVNL.

During April, 2014 – September, 2014, the following major issues were reviewed and the contractors were requested for their early compliances:

- Statutory clearances/Permits/Licenses and their renewal
- Dust control measures at all potential source
- Quarterly environmental monitoring for ambient air, noise and water quality.
- Borrow area operations and rehabilitation
- General Safety at different sites including construction site, plant site, borrow areas, stockyards, etc.
- Improvement in general housekeeping at each construction camp sites.
- Providing first aid facility at camps, construction sites and Plant sites
- HIV/AIDS awareness and health check up programme
- Supply and use of Personal Protection Equipments (PPE) for all the workers at all worksites
- Maintenance of general public safety.
- Record keeping on environmental safeguard of the project

## 5. Environmental Monitoring Performance

For effective monitoring of Environmental Compliance, Environmental Performance Indicators have been identified which may be assessed qualitatively and quantitatively on periodic basis during project execution. The various environmental indicators selected are based on physical, chemical and biological parameters.

### 5.1. Compliance with loan covenants, state and national statutes & regulations

#### (a) Compliance status with the Environmental Covenants as stipulated in the Loan Agreement

The Framework Finance Agreement was signed between the Government of India and ADB under the Railway Sector Investment Programme on 8<sup>th</sup> July, 2011. The Loan Agreement for tranche 1 was signed on 9 July, 2012 (Loan No. 2793-IND) and for tranche 2 on 17 February 2014 (Loan No. 3108-IND).

The Schedule 4 of the FFA stipulates the environmental considerations whereas the Schedules 4 and 5 of Loan Agreement (Ordinary Operations) stipulates the requirements of environmental safeguards. The project's compliance to requirements on environment safeguards is as follows:

S.N.	Loan Covenants	Status of Compliance
<b>A.</b>	<b>FRAMEWORK FINANCING AGREEMENT</b>	
1	<p><b>Schedule 4 A. 1(iv):</b></p> <p>The project will also be environmentally and socially sound and include measures to mitigate any possible environment and social impacts in accordance with the safeguard framework-1 prepared (Schedule 5) and Safeguard Policy Statement (SPS) 2009. For each project, a poverty and social analysis will be conducted in accordance with ADBs guidelines on poverty and social assessment. Similarly, an environmental assessment will be carried out for each project in accordance with the SPS 2009.</p> <p>All measures and requirements set forth in the respective initial environmental examination. ("IEE"), environment impact assessment ("EIA") and environmental management plan ("EMP"), and any corrective or preventative actions set forth in a safeguards monitoring report, MOR and RVNL shall ensure that all bidding documents and contracts for works contain provisions that require contractors to comply with the measures and requirements relevant to the contractor set forth in the IEE/EIA, the EMP, the RP and the IPP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in the safeguards monitoring report.</p>	<p>Complied.</p> <p>For each project IEE has been undertaken in accordance with the ADB's SPS 2009. The Environmental Management and Monitoring Plan have been formulated for all the projects and is the part of tender documents. During construction it has been ensured that all the necessary permits/ approvals/ licenses are obtained as well as adequate actions on environmental safeguard have been undertaken during construction in accordance with the EMP.</p>
2	<p><b>Schedule 4 A. 1(iv):</b></p> <p>For each project, all necessary Government approvals will be obtained, including MOR, Ministry of Environment and Forest, Pollution Control Boards, and other relevant agencies, as applicable.</p>	<p>Complied</p> <p>The necessary approvals and licenses in each project has been ensured. The status of clearances/approvals/ licenses as upto September, 2014 is presented in Table 3</p>
<b>B.</b>	<b>LOAN AGREEMENT (ORDINARY OPERATIONS)</b>	

S.N.	Loan Covenants	Status of Compliance
3	<p><b>Schedule 4 B: Approval Procedure</b></p> <p>2. All projects will be prepared and processed in accordance with the procedures set out below.</p> <p>(i) MOR will select a possible project from railway priority, which is part of the existing network implemented by the MOR. MOR will then conduct a feasibility study for the project including its cost estimate, technical and economic analysis. MOR will also prepare (a) an initial poverty and social assessment (IPSA) and fill out a checklist for (b) involuntary resettlement; (c) indigenous people; and (d) complete the Rapid Environmental Assessment (REA) checklist for screening of environmental issues.</p>	<p>Rapid Environmental Assessment has been prepared for all the projects and accordingly categorization of all the 5 projects has been done. The projects have been categorized as “Category-B” projects based on environmental issues and hence only IEE was required for the projects. The IEE reports have been approved by ADB.</p>
	<p><b>Schedule 4: Conditions for Award of Contract: Para 6:</b> The Borrower shall not award any works contract for any part of the project which involves environmental impacts until RVNL has</p> <p>(a) Obtained the final approval of the IEE from the relevant Environment Authority of the Borrower</p> <p>(b) Incorporated the relevant provisions from the EMP into the Works contract.</p>	<p>Complied</p> <p>The approved EMP has been incorporated into all the contract agreements for all the construction packages.</p>
4	<p><b><u>Schedule 5: Execution of Project; Financial Matters:</u></b></p> <p><b>Environment Para 7 (b)</b> The Borrower shall ensure, and cause to MOR and RVNL to ensure, that works under a contract shall not be commenced in the relevant section, until forestry clearance and permits from Pollution Control Boards for Operation of Hot Mix Plants are obtained</p>	<p>Complied</p> <p>No Hot Mix Plants have been installed in any of the Contract packages.</p>
5	<p><b><u>Schedule 5: Execution of Project; Financial Matters:</u></b></p> <p><b>Safeguards related Provisions in Bidding Documents and Works Contract: Para 12:</b> The Borrower shall ensure, and cause MOR and RVNL to ensure that all bidding documents and contracts for works contain provisions that require Contractors to</p> <p>(a) Comply with the measures and requirements relevant to the contractor</p>	<p>Being complied with</p>

S.N.	Loan Covenants	Status of Compliance
	<p>set forth in the IEE, the EMP, the RP and the IPP (to the extent they concern impacts on affected people during construction), and any corrective or preventive actions set out in a Safeguard Monitoring Report.</p> <p>(b) Make available a budget for all such environmental and social measures; and</p> <p>(c) Provide the Borrower and ADB with a written notice of any unanticipated environmental, resettlement or indigenous people risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the RP or the IPP.</p>	<p>Environmental monitoring and mitigation costs allocated/incorporated in contract agreement</p> <p>No such incidence has appeared till date</p>
6	<p><b><u>Schedule 5: Execution of Project; Financial Matters:</u></b></p> <p><b><u>Safeguards Monitoring and Reporting (Para 13) :</u></b></p> <p>The Borrower shall do the following and shall cause MOR and RVNL to the following:</p> <p>(a) Submit Semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission.</p> <p>(b) If any unanticipated environmental and/or social risk and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the RP or the IPP promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan.</p> <p>(c) Report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, the RO or the IPP promptly after becoming aware of the breach</p>	<p>The semi-annual report has been prepared as per the guidelines in compliance</p> <p>No such environmental risk has been encountered in any of the projects. Will be complied in case such unanticipated incidence appears in future.</p> <p>No breach of compliance recorded in any of the projects till date.</p>

Table 2: Compliance status with Loan Covenants



**(b) Compliance with state and national statutes & regulations:**

The requirement of statutory permits/ clearances and the status of compliance with State and National Statutes and Regulations in each package of all the 5 projects for the reporting period are presented in Table 3.

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
<b>1. Daund-Gulbarga Doubling of Track Project</b>				
(i) <b>Construction Package -1 (DG-1): Bhigwan-Mohol Section (127.14 Kms)</b>	• Forest Diversion	RVNL	Not required	No forest land involved
	• Approval of Tree Cutting	RVNL	Obtained	
	• NOC Consent to Establish & Operate) for Stone Crusher Plant from State Pollution Control Board	Contractor	Obtained	Plant yet to be commissioned
	• NOC Consent to Establish & Operate) for Batching Plant State Pollution Control Board	Contractor	Not required	No Batching Plant erected
	• Quarry Licence	Contractor	Obtained	
	• Environmental Clearance for Stone Quarry	Contractor	Obtained	
	• Permission for Blasting Activities	Contractor	Obtained	
	• Labour License	Contractor	Obtained, renewal of Labour License done.	
(ii) <b>Construction Package 2 (DG-2): Hotgi-Gulbarga Section (98 Kms)</b>	• Forest Diversion	RVNL	Not required	No forest land involved
	• Approval of Tree Cutting	RVNL	Obtained	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not required	No Batching Plant established till date.
	<ul style="list-style-type: none"> <li>Quarry Licence</li> </ul>	Contractor	In process	Presently the aggregate is procured from third party licensed quarry
	<ul style="list-style-type: none"> <li>Environmental Clearance for Stone Quarry</li> </ul>	Contractor	In process	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	NA	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained & renewed	
<b>2. Doubling of Hospet – Tinaighat Section</b>				
<b>(i) Construction Package-1 (HT-1):</b> Hospet-Harlapur Section (69.22 Kms)	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	CtE obtained CtO is awaited from Pollution Control Board.	Plant yet to be commissioned
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	CtE and CtO obtained	
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Obtained	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>Environmental Clearance for Stone Quarry</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained and renewed	
(ii) <b>Construction Package-2 (HT-2):</b> Harlapur – Hebur section (55.030 Kms) & Hubli-Dharwad Section (Km 20.09) Total 75.12 Kms	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	No forest land involved.
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not yet obtained (The stone crusher plant erected by the Contractor is presently non operational and the contractor is procuring the materials from third party)	One stone crusher unit has been installed by the contractor but the plant is not operational. The contractor is procuring the crushed stone from third party having licensed stone crusher. If Contractor wants to use his own plant, then necessary permits and licenses would be required.
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not required	No plant proposed till date.
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Not obtained (The Contractor is presently	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
			not operating its own quarry and is procuring the materials from third party licensed quarry)	
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not obtained (The Contractor is presently not operating its own quarry and is procuring the materials from third party licensed quarry)	The quarry is not operational and the contractor is intended to use third party licensed quarry.
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not required	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained & renewed	
(iii) <b>Construction Package- 3 (HT-3):</b> Kambarganvi-Londa (45.180 Kms) & Londa-Tinaighat (13.2) Total 58.380 Kms	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	No forest land involved
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Obtained	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	Engaged licensed blaster
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained	
<b>3. Doubling of Raipur - Titlagarh Section</b>				
(i) <b>Construction Package- 1 (RT-1):</b> Titlagarh – Kakhna Section (72.948 Kms)	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not required	No Batching Plant established
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Obtained	
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Obtained	
(ii)	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not required	Licensed blaster has been engaged for the activity
(iii)	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained & renewed	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
(iv) <b>Construction Package- 2 (RT-2):</b> Lakhna – Arand Section (68.936 Kms)	<b>Contract Terminated</b>			
(v) <b>Construction Package- 3 (RT-3):</b> Arand Raipur Section (57.404 Kms)	• Forest Diversion	RVNL	Not required	
	• Approval of Tree Cutting	RVNL	Obtained	
	• NOC Consent to Establish & Operate) for Stone Crusher Plant from State Pollution Control Board	Contractor	Not required	Presently no Stone Crusher is established.
	• NOC Consent to Establish & Operate) for Batching Plant State Pollution Control Board	Contractor	Obtained	
	• Quarry License	Contractor	Not Applicable	
	• Environmental Clearance for Quarry	Contractor	Not Applicable	
	• Permission for Blasting Activities	Contractor	Not Applicable	
	• Labour License	Contractor	Obtained & renewed	
<b>4. Doubling of Sambalpur – Titlagarh Section</b>				
(i) <b>Construction Package- 1 (ST-1):</b> Important	• Forest Diversion	RVNL	Not required	
	• Approval of Tree Cutting	RVNL	Not Applicable	



Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
Bridges of Sambalpur-Titlagarh Project	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not Applicable	Stone crusher not established.
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Obtained for one plant, yet to obtained for plant no. 2 & 3	A total number of 3 Batch Mix Plants have been erected by the Contractor. Application to be made for 2 Plants
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained	
(ii) <b>Construction Package- 2 (ST-2):</b> Sambalpur-Barapali Section	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	Project package does not involve acquisition of forest land
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Approval for tree cutting obtained for Bargarh forest Division for chainage 580/10 to 634/9-10	Follow up for permission for tree cutting in remaining section

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not Applicable	No plant established till date
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not Applicable	No plant established till date
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Not Applicable	Not yet identified
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	Blasting not proposed till date
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained	
(iii) <b>Construction Package- 3 (ST-3): Barapali-Bolangir Section</b>	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	Project package does not involve acquisition of forest land
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Applied for	Under process by DFO
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not Applicable	No plant established

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not Applicable	No plant established
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Not Applicable	Not yet identified
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	Blasting is not proposed till date
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained	
(iv) <b>Construction Package- 4( ST-4): Bolangir-Titlagarh Section</b>	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	Project package does not involve acquisition of forest land
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Applied for	Under process by DFO
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Quarry License</li> </ul>	Contractor	Not Applicable	Not yet identified

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	No blasting is proposed till date
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained	
<b>5. Electrification of Pune - Bhigvan &amp; Gulbarga - Wadi Section</b>				
(i) <b>Construction Package-1 (PG-1):</b> Yevat, Daund and Martur (72.948 Kms)	<ul style="list-style-type: none"> <li>Forest Diversion</li> </ul>	RVNL	Not required	
	<ul style="list-style-type: none"> <li>Approval of Tree Cutting</li> </ul>	RVNL	Not required	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Stone Crusher Plant from State Pollution Control Board</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>NOC Consent to Establish &amp; Operate) for Batching Plant State Pollution Control Board</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Quarry Licence</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained & renewed	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
(ii) <b>Construction Package-2 (PG-2): Raichur - Wadi</b>	• Forest Diversion	RVNL	Not required	
	• Approval of Tree Cutting	RVNL	Not required	
	• NOC Consent to Establish & Operate) for Stone Crusher Plant from State Pollution Control Board	Contractor	Not Applicable	
	• NOC Consent to Establish & Operate) for Batching Plant State Pollution Control Board	Contractor	Not Applicable	
	• Quarry Licence	Contractor	Not Applicable	
	• Environmental Clearance for Quarry	Contractor	Not Applicable	
	• Permission for Blasting Activities	Contractor	Not Applicable	
	• Labour License	Contractor	Obtained and renewed	
(iii) <b>Construction Package-3 (PG-3): Guntakal - Raichur</b>	• Forest Diversion	RVNL	Not required	
	• Approval of Tree Cutting	RVNL	Not required	
	• NOC Consent to Establish & Operate) for Stone Crusher Plant from State Pollution Control Board	Contractor	Not Applicable	
	• NOC Consent to Establish & Operate) for Batching Plant State Pollution Control Board	Contractor	Not Applicable	

Project	Statutory Environmental Requirements	Responsibility	Status of Compliance	Remarks/Action Required
	<ul style="list-style-type: none"> <li>Quarry Licence</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Environmental Clearance for Quarry</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Permission for Blasting Activities</li> </ul>	Contractor	Not Applicable	
	<ul style="list-style-type: none"> <li>Labour License</li> </ul>	Contractor	Obtained and renewed	

Table 3: Packagewise status of Compliance with state and national statutes &amp; regulations

## **5.2. Compliance with the Environmental Management Plan**

All the packages have shown improvement in overall performance of the implementation of environmental safeguard measures during the reporting period compared to last six months.

### **5.2.1. Compliance with EMP Implementation at Construction and Plant sites:**

The dust control measures in all the construction packages at different locations have been found to be satisfactory. Regular water sprinkling in all the construction zones are being ensured to control dust generation effectively. In construction packages, where stone crusher plants and batching plants are installed, installation of dust suppression system at plant and their maintenance to worthy conditions have been ensured. Regular sprinkling of water on earthen roads and other area of plant is carried out to control dust emission.

### **5.2.2. Compliance with safety requirements at site:**

With constant efforts of PMC and PIU, there is marked improvement in supply of PPEs to the workers and their usage by construction workers at different work sites. Regular safety talks and awareness programme are carried out in all the construction packages. The Contractor has started periodical in-house safety training to the workers to make the workers aware of the hazards associated with the works and importance of use of safety equipments during working period which can help in effective implementation and enforcement of safety measures. It has also been ensured that at all the working sites first aid box is provided. At plant site, office complex and store house fire fighting arrangements have been made and maintained.

### **5.2.3. Compliance with EMP Implementation at quarry site and Borrow Areas:**

It is being ensured that the proposed quarry sites and borrow areas are devoid of any sensitive socio-environmental features and any adverse socio-environmental impact due to their operation. It has been ensured that no borrow area is operational without written consent of the land owner. The selection and operation of the borrow area is in accordance with the guidelines provided in the EMP as well as the Ministry of Environment and Forest (MoEF). Emphasis has been given to suitable rehabilitation of the proposed area after completion of the material extraction, thereby helping in enhancing the physical environmental condition of the area producing overall socio-economic benefits. The measures taken for controlling fugitive dust emission during the excavation, loading and transportation of materials at all the operational quarries and borrow areas are satisfactory.

During the report period special emphasis has been given on rehabilitation of borrow areas after completion of extraction of materials. In all the construction packages the rehabilitation activities as per land owner's requirement have been taken up by the contractor before handing over the land back to the land owner.

### **5.2.4. Workers/Labour Camps:**

The labour camps are operational in construction packages DG-1, DG-2, ST-1, RT-1, HT-1, HT-2 and HT-3. In general the condition of the labour camps have improved during the reporting period. The labour camps have been provided with basic amenities such as drinking water facility, sanitation arrangements, toilets and bathrooms in package HT-1, HT-3, main contractor's camp of DG-1, ST-1, and RT-1. Special emphasis has been given on maintaining proper hygienic condition at all the campsites and the same were monitored on regular basis. It has been ensured that at all camp sites



all blocked drainages are being cleared, water is drained out from water logged area, weeds grown due to rains are cleared from the premises and bleaching powder and insecticides are sprayed periodically at all the potential sites of spread of diseases and breeding of mosquitoes. However attention is required for further improvement in living conditions for labours in the labours camps in construction camps of HT-2, DG-2 and sub-contractor's in Packages DG-1. The Contractors of these packages have been requested to provide and maintain all the basic facilities at camps in accordance with the EMP and statutory norms.

#### 5.2.5. Health check-up and AIDS awareness for workers:

On this issue all the contractors of all the construction packages have shown improvement. During last six months medical checkups and Aids/HIV awareness camps were organized in all the construction packages except for ST-2, ST-3 and ST-4. The Construction packages ST-2, ST-3 and ST-4 are in the initial stage of construction and these activities are proposed in the next quarter in these packages. So far no HIV/AIDS positive case has been reported.

#### 5.2.6. Mobilisation of PMC's and contractors environmental personnel:

The PMCs have mobilized their Environmental Officer in their respective packages to ensure effective monitoring of implementation of EMP at site, identification of additional environmental issues of project as well as record keeping on environmental safeguards.

#### 5.2.7. Public complaints on environmental and safety issues of project:

There is a functional Environmental Grievance Redressal Mechanism to help address any environment related concern or grievance. During the reporting period the informatory signboards have been installed in all the construction packages for receiving public complains/ suggestions as a part of Environmental Grievance Redressal Mechanism. A register for Grievance redressal has been kept at all the construction packages for registering the public complain/grievance on environmental issues. During the reporting period no public complain with respect to environmental issues has been received in any of the construction packages.

### 5.3. Environmental Performance Rating

Based on the site inspections by GC, PMC's report on EMP compliance status, assessment of compliance to the requirement of EMP of the Contract, overall performance rating has been done for the project which is indicated below:

*Note: The construction packages ST-2, ST-3 and ST-4 have been awarded recently and the contractors are in the initial stage of mobilization, so these packages have not been included for performance rating*

Sl. No.	Activity	Performance Rating
<b>Compliance with Statutory Rules and Regulations</b>		
1	Construction Schedule Integrating EMP	Satisfactory

Sl. No.	Activity	Performance Rating
2	Licenses and Permits for plants and equipments and Quarry	Satisfactory.
3	Labour Licenses	Good in all packages.
4	Site Selection / Clearance	Satisfactory
<b>Construction Related Compliance</b>		
5	Traffic Safety Measures	Good in HT-1 and HT-3, PG, DG, RT-3 Satisfactory in RT-1 and ST-1, needs improvement in HT-2
6	Construction Camps	Satisfactory
7	Labour Camps and Facilities	Satisfactory in construction packages ST-1, HT-1, HT-3, DG-1, RT-1. Improvement is required in the field of sanitation, fire waste collection and disposal arrangements in construction packages HT-2, DG-2 and RT-3. The facilities at labour camp of subcontractors are the liabilities of main contractor and often taken casually by him. There are no regular labour camps established by the contractor at PG as local labours have been engaged for electrification work .
8	Medical facilities and health checkups of workers	Good in HT and PG projects and package RT-1 (Health checkups of workers have been ensured), require improvement in other projects
9	Dust Control:	
	(A) At Plant Site	Satisfactory in all the packages
	(B) At Construction Sites	Satisfactory in all the packages
10	Stock Piling of Topsoil	Satisfactory
11	First Aid Facilities	Satisfactory in all the packages
12	Safety Equipment for Labour and Other Staff	Good in HT-1 and HT-3, PG-2, PG-3, and Satisfactory in DG-1, PG-1, RT-3 and ST-1. Require improvement in HT-2, DG-2 and RT-1 Packages  Improvement required for the workers of subcontractors. Adequate number of PPE's required to be supplied by the main contractor to all the

Sl. No.	Activity	Performance Rating
		associated workers and proper use of PPE's should be encouraged.
13	Proper storage and handling of chemicals and waste oils	Satisfactory
14	Sanitation and Waste Management	Satisfactory in HT-1, HT-3, PG, ST-1, DG-1, and RT-1 Packages but needs improvement in all the campsites of DG-2, HT-2 and RT-3 packages. The subcontractor's campsites are also required proper attention by the main contractor.
15	Employment for Local Villagers / Residents	Satisfactory
16	Safety Measures During Execution of Works	Satisfactory in construction packages HT-1, HT-3, DG-1, RT-1 and PG-1, PG-2 & PG-3, needs improvement in packages ST-1, RT-3, HT-2 and DG-2.  All necessary precautionary measures shall be addressed while work conducted in close proximity to the live Railways.
17	Emergency Preparedness Plans	Good in HT-1, HT-3, PG-1, PG-2 and PG-3; Satisfactory in remaining packages
18	Borrow Area operation and Rehabilitation	Satisfactory except in package DG-2 and HT-2 where the restoration activities require improvement.
19	Debris Clearance from Site	Satisfactory in all construction packages except in HT-2 and ST-1 packages
20	Awareness Programme on HIV/AIDS and other STD for Workers	Good in all the packages.
21	Monitoring of Environmental Quality	Good in Package HT-1, HT-2, HT-3, DG-1, Satisfactory in DG-2, PG-2, PG-3 and ST-1. Need improvement in PG-1, RT-1 and RT-3  In RT-3, Odisha Pollution Control was engaged for environmental monitoring. Sampling for monitoring of environmental attributes was done in the month of January, 2014 but due to some issues, the test results were not submitted. Advised to appoint alternate laboratory for monitoring.

Sl. No.	Activity	Performance Rating
22	Appointment of Environmental and Safety Officer (by Contractor and PMC)	The PMC has appointed their Environmental Officer in all the packages. The Contractors have nominated their EHS Experts in all the packages
23	Appointment of Focal Environmental Officer at Corporate level and PIU level	Very Good

Table 4: Performance rating on Compliance with the Environmental Management Plan

Some site photographs indicating mitigation measures being implemented and also examples of good practices and bad practices has been provided as Annexure.

#### 5.4. Significant Non-Compliances

No significant non compliance have been observed during the reporting period. A non conformance has been observed with respect to the compliance with the statutory norms in ST-1 where NOC for two batching plants are still pending.

In packages DG-2 and HT-2 the Contractors have stopped the operation of stone crusher plant and are procuring the ballast from third party having licensed stone crusher as well as stone quarry. The Contractors have been strictly instructed to obtain requisite permits and NOC prior to start of operation of plant, if planned for future.

#### 5.5. Monitoring of environmental quality attributes

Besides regular monitoring of EMP implementation in general, air quality, water quality and noise levels are also required to be monitored specifically to check if any adverse impact is being caused by any of the construction activities. The monitoring of the above environmental attributes is required to be done in accordance with the Environmental Monitoring Plan stipulated in IEE and approved plan in specific construction package prepared in compliance to the EMP requirement and specification. During the reporting period monitoring of Environmental Quality in terms of Air, water and noise levels have been carried out in construction packages, DG-1, DG-2, RT-1, ST-1, HT-3, PG-1, PG-2 and PG-3 to assess the additional load on pollution due to construction activities. The monitoring results of these packages reflect that the project activities do not have any significant additional load on pollution in the area.

S. No.	Project/ Construction Package	Monitoring of Environmental Components		
		Air Quality	Water Quality	Noise Level
1	Daund-Gulbarga Doubling Project			
(i)	DG-1	Air quality monitoring was carried out in the month of September, 2014 at 3 locations with respect to SPM, PM10, NOx and CO	Water quality monitoring was carried out for ground water source at 4 locations in	Noise monitoring was carried out at 4 locations in the month of April, 2014.

S. No.	Project/ Construction Package	Monitoring of Environmental Components		
		Air Quality	Water Quality	Noise Level
			the month of September, 2014	
(ii)	DG-2	The monitoring of Air was carried out in the month of September, 2014 at 3 locations (At Dudhani Crusher Plant, at Tilathi camp site and at Construction zone at Hotgi) respect to PM10, PM2.5, SO2, NOx, CO, lead and HC.	Water monitoring was carried out in the month of September, 2014 for the samples collected from borewells at Talathi camp site, Crusher Plant site, Dudhani and Hotgi construction zone.	Noise level monitoring was carried out in the month of September 2014 at 3 locations, covering Crusher Plant site, Dudhani and Tilathi Camp site and Construction zone at Hotgi
<b>2</b>	<b>Hospet-Tinaighat Doubling Project</b>			
(i)	HT-1	Air quality monitoring was undertaken in the month of February, 2014. Not done in during the reporting period	Water quality monitoring was undertaken in the month of February, 2014. Not done in during the reporting period	Noise level monitoring was undertaken in the month of February, 2014. Not done in during the reporting period
(ii)	HT-2	Air quality monitoring was undertaken in the month of March, 2014. Not done in during the reporting period	Water quality monitoring was undertaken in the month of March, 2014. Not done in during the reporting period	Noise level monitoring was undertaken in the month of March, 2014. Not done in during the reporting period
(iii)	HT-3	Air Quality Monitoring was carried out in May, 2014 with respect to PM10, SO <sub>2</sub> and NO <sub>2</sub> covering stone crusher plant site, batching plant site and construction zones	Water quality monitoring was carried out for ground water source (Bore wells) in the month of May, 2014 at Campsite, at Stone Crusher Plant and at Ready Mix Concrete Plant site. There is no surface water source located within the project influence area, so no surface water	Noise level monitoring was carried out in the month of May, 2014 at 5 locations during daytime covering Camp Site, Stone crusher plant, construction zone, Ready Mix Concrete Plant and haul roads.

S. No.	Project/ Construction Package	Monitoring of Environmental Components		
		Air Quality	Water Quality	Noise Level
			monitoring has been carried out.	
3.	Raipur-Titlagarh Doubling Project			
(i)	RT-1	Air quality monitoring was carried out in July, 2014 at 7 locations (At Office Complex, Kantabanji, at stone Crusher Plant, at Major Bridge 325 at Chianage 199.690, near Turekala Railway Station and at major bridge 242, Near Muribahal Railway Station and Near Rehanbhata Railway Station) with respect to PM10, PM2.5, SO2,NOx,CO, Pb, Ni, As and Benzene.	Water quality monitoring was carried out in July, 2014 at 6 locations (At Office Complex, Kantabanji; at stone Crusher Plant; and water sources at Harishankar, Turekala Muribahal and at Rehanbhata Railway Stations)	Noise level monitoring was carried out in July, 2014 at 7 locations (At Office Complex, Kantabanji, at stone Crusher Plant, at Major Bridge 325 at Chianage 199.690, near Turekala Railway Station and at major bridge 242, Near Muribahal Railway Station and Near Rehanbhata Railway Station)
(ii)	RT-2	Contract Terminated		
(iii)	RT-3	Odisha Pollution Control was engaged for environmental monitoring. Sampling for monitoring of environmental attributes was done in the month of January, 2014 but due to some issues, the test results were not submitted. Replacement of monitoring laboratory is required for monitoring.		
4.	Sambalpur-Titlagarh Doubling Project			
(i)	ST-1	The monitoring of Ambient Air Quality was carried out in the month of May, 2014 at 3 locations at base camp near Office, Batching Plant and Fabrication Yard with respect to SPM, RPM (PM10), SO2, NOx and CO.	The monitoring of water quality was carried in the month of May, 2014 for drinking water source at Loisingha Camp site and for borewell water near Parking area at Camp..	The monitoring of noise level has been carried out in the month of May, 2014 at 4 locations at Base Camp near Office, Batching Plant, D.G. area and near Fabrication Yard.
(ii)	ST-2	The Contract is in the initial stage and monitoring not yet started		

S. No.	Project/ Construction Package	Monitoring of Environmental Components		
		Air Quality	Water Quality	Noise Level
(iii)	ST-3	The Contract is in the initial stage and monitoring not yet started		
(iv)	ST-4	The Contract is in the initial stage and monitoring not yet started		
5.	Pune-Guntakal Railway Electrification			
(i)	PG-1	Air Monitoring was carried out at 4 locations (Camp at Loni, Yavat Camp, Daund Camp and Gulbarga Camp) in the month of May, 2014 with respect to SPM, PM10, PM2.5 SO <sub>2</sub> and NO <sub>2</sub> and CO	Water quality monitoring was conducted in the month of May, 2014 at Loni Camp, Daund Office, Gulbarga Camp	Noise level monitoring was Carried out in the month of May, 2014 at 5 locations (Loni Camp, Daund office Complex, TSS building construction zone at Daund, Yavat Camp and Gulbarga Camp)
(ii)	PG-2	Air Monitoring was carried out at Krishna TSS Building Construction site and Yadgir workshop in the month of July, 2014 with respect to PM10, PM2.5 SO <sub>2</sub> and NO <sub>2</sub> and CO	Water quality monitoring was conducted at workshop at Krishna and Yadgir in the month of July, 2014	Noise level monitoring was Carried out at 2 locations one at Krishna TSS Building construction site and another at Yadgir in the month of July, 2014.
(iii)	PG-3	Air Monitoring was Carried out at workshop at Aspari Railway Station and Adoni Railway Station in the month of July, 2014 with respect to PM10, PM2.5 SO <sub>2</sub> and NO <sub>2</sub> and CO	Water quality monitoring has been conducted for borewell water at Aspari railway station and at Adoni Workshop in the month of July, 2014	Noise level monitoring was Carried out at Aspari Railway Station and Adoni Railway Station Workshop in Novethe month of July, 2014

Table 5: Status of Monitoring of Environmental Attributes during last 6 months



**a. Ambient Air Quality**

The Ambient air quality was monitored at different locations at subproject HT-1, HT-3, DG-1 and ST-1 during last 6 months as per environmental monitoring plan. The test results reflect that all the measured parameters were within the prescribed limit of CPCB. The package-wise ambient air quality monitoring results are presented in following table:

S. No.	Project/Subproject	Date of Sampling	Concentration of air quality parameters					
			SPM (µgm <sup>-3</sup> )	PM10 (µgm <sup>-3</sup> )	PM2.5 (µgm <sup>-3</sup> )	SO2 (µgm <sup>-3</sup> )	NOx (µgm <sup>-3</sup> )	CO (mgm <sup>-3</sup> )
I. Daund-Gulbarga Project								
1.	Subproject DG-1							
(i)	Bhalwani (Ch 343/5000	12.9.2014	139	75			41	0.475
(ii)	Washimbe Section Ch 320.000	12.09.2014	116	63			36	0.480
(iii)	Construction zone at Bridge No. 407/1 near Angar Railway Station	10.9.2014	159	68			21	0.435
(iv)	Mallikpet Railway Station	10.9.2014	144	69			25	0.450
2.Subproject DG-2								
(i)	Tilathi Camp site	23.09.2014		52	16	10.6	12.4	BDL
(ii)	Hotgi Construction Site			46	14	8.6	9.2	BDL
(iii)	Stone Crusher Plant, Dudhani			58	18	11.4	12.6	BDL
II. Hospet-Tinaighat Project								
(i)	Stone Crusher Unit at Adali village Ramnagar	8.05.2014		46	-	24	18	
(ii)	Near Batching Plant	8.05.2014		64		26	14	
(iii)	At construction zone	8.05.2014		33		21	26	

S. No.	Project/Subproject	Date of Sampling	Concentration of air quality parameters					
			SPM (µgm <sup>-3</sup> )	PM10 (µgm <sup>-3</sup> )	PM2.5 (µgm <sup>-3</sup> )	SO2 (µgm <sup>-3</sup> )	NOx (µgm <sup>-3</sup> )	CO (mgm <sup>-3</sup> )
III. Raipur-Titlagarh Project								
1. Subproject RT-1								
(i)	Office Complex, Kantabanji	1.7.2014		68.3	39.7	10.5	12.8	0.432
(ii)	Stone Crusher Plant, Harishankar Road	1.7.2014		78.1	45.2	11.6	14.7	0.501
(iii)	Major Bridge 325 at Ch. 199+690	2.07.2014		61.6	33.4	11.2	12.5	0.394
(iv)	Near Turekala Railway Station	2.7.2014		65.7	35.8	12.1	13.6	0.411
(v)	Near Major Bridge 242	4.7.2014		59.8	31.2	10.7	12.4	0.386
(vi)	Near Muribahal Railway Station	4.7.2014		62.4	33.9	11.3	13.3	0.403
(VII)	Near Rehanbhata Railway Station	5.7.2014		63.5	34.1	12.2	13.8	0.457
IV. Sambalpur-Titlagarh Project								
1. Subproject ST-1								
(i)	At Batching Plant Site	20.05.2014	348.5	56.8	-	12.6	19.4	0.17
(ii)	At Base Camp		186.0	67.3	-	14.6	16.8	0.18
(iii)	Bridge Construction site		122.4	45.6	-	9.1	14.6	0.13
V. Pune-Guntakal Electrification Project								
1.	Subproject PG-1	Contractor has not submitted the test result during report period						
(i)	Loni Camp	30.05.2014	230	67	40	8.2	18.4	0.124
(ii)	Yavat Camp	30.05.2014	218	64	38	6.4	16	0.110
(iii)	Daund Site Office Complex	30.05.2014	190	60.7	36.5	5.7	15.8	<0.1
(iv)	Near TSS Building, Daund	30.05.2014	264	72.4	42.8	8.8	21.4	146

S. No.	Project/Subproject	Date of Sampling	Concentration of air quality parameters					
			SPM ( $\mu\text{gm}^{-3}$ )	PM10 ( $\mu\text{gm}^{-3}$ )	PM2.5 ( $\mu\text{gm}^{-3}$ )	SO2 ( $\mu\text{gm}^{-3}$ )	NOx ( $\mu\text{gm}^{-3}$ )	CO ( $\text{mgm}^{-3}$ )
(v)	At Gulbarga Camp site	31.05.2014	266	73	44.5	9.7	20.8	0.134
<b>2. Subproject PG-2</b>								
(i)	Yadgir TSS Building	24.07.2014		47.1	13	7.5	12.2	BDL
(ii)	Krishna TSS Building	24.07.2014		50.9	14.4	7.9	12	BDL
<b>3. Subproject PG-3</b>								
(i)	At Aspari Camp Site	23.07.2014		49.7	13.2	8.0	11.5	BDL
(ii)	Adoni railway Station workshop	23.07.2014		55.1	12.9	7.7	11.6	BDL
	<b>Standard Limit (As per CPCB)</b>	-	-	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>2.0</b>

Table 6: Packagewise Ambient Air Quality at different locations

**b. Water Quality**

The samples of water from different sources were collected and tested for physico chemical characteristics in subproject, DG-1, DG-2, RT-1, ST-1, HT-3, PG-1, PG-2 and PG-3 during reporting period as per environmental monitoring plan. The test results reflect that all the measured parameters were within the permissible limit as per IS 10500-2012. The packagewise water quality monitoring results are presented in following tables.

Parameters	Unit	Sampling locations				Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Drinking water source at Bhalwani 343/500	Drinking water source at Mallikpet Bridge Site	Drinking water source at Chainage 320.000 of Washimbe-Parewadi Section	Drinking water source at Bridge 407/1 near Angar Railway Station		
pH		6.8	7.3	6.8	7.0	6.5-8.5	6.5-8.5
Turbidity, NTU	NTU	<1	<1	<1	<1	6.5-8.5	6.5-8.5
Total Dissolved Solid	mg/l	486	394	492	485	500	2000

Parameters	Unit	Sampling locations				Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Drinking water source at Bhalwani 343/500	Drinking water source at Mallikpet Bridge Site	Drinking water source at Chainage 320.000 of Washimbe-Parewadi Section	Drinking water source at Bridge 407/1 near Angar Railway Station		
Total Hardness as CaCO <sub>3</sub>	mg/l	190	152	195	180	200	600
Chlorides as Cl	mg/l	136	98	160	125	250	1000
Iron as Fe	mg/l	<0.01	<0.01	<0.01	0.06	0.3	0.3
Total Coliforms	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	10

Table 7: Water Quality at Different locations in Construction Package DG-1 ( Date of Sampling: 10.09..2014)

Parameters	Unit	Sampling locations			Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Borewell Water at Dudhani Plant Site	Borewell water at Tilathi Camp	Borewell water at Hotgi Work Site		
pH		7.41	7.5	7.3	6.5-8.5	6.5-8.5
Conductivity $\mu$ -mho/cm		82	96	92	-	-
Turbidity, NTU	NTU	<1	<1	<1	1	5
Total Dissolved Solid	mg/l	164	184	186	500	2000
Total Hardness as CaCO <sub>3</sub>	mg/l	84	52	56	200	600
Calcium as Ca	mg/l	36	18	22	75	200
Magnesium (as Mg)	mg/l	14	12	14	30	100
Chlorides as Cl	mg/l	42	62	58	250	1000

Parameters	Unit	Sampling locations			Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Borewell Water at Dudhani Plant Site	Borewell water at Tilathi Camp	Borewell water at Hotgi Work Site		
Sulphate (as SO <sub>4</sub> )	mg/l	22	24	22	200	400
Alkalinity (as CaCO <sub>3</sub> )	mg/l	32	38	36	200	600
Fluoride (as F)	mg/l	0.32	0.62	0.58	1.0	1.5
Nitrate (as NO <sub>3</sub> )	mg/l	04	4.8	4.4	45	No relaxation
Oil & Grease	mg/l	BDL	BDL	BDL	-	-
Iron as Fe	mg/l	0.16	0.22	0.25	0.3	0.3
Chromium as Cr	mg/l	<0.05	<0.05	<0.05	0.05	0.05
Lead as Pb	mg/l	<0.01	<0.01	<0.01	0.01	0.01
Arsenic as As	mg/l	<0.01	<0.01	<0.01	0.01	0.05
Total Coliforms	MPN/100 ml	Nil	Nil	Nil	Absent	10

Table 8: Water Quality at different locations in subproject DG-2 ( Date of Sampling: 23.09.2014)

Parameters	Unit	Sampling locations						Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Borewell water at Crusher Plant, Harishankar Road	Office Complex, Kantabani	Muribahal Railway Station	Harishankar Railway Station	Turekela Railway Station	Rehenbata Railway Station		
pH		7.22	7.09	6.94	6.86	6.46	7.18	6.5-8.5	6.5-8.5
Conductivity	μ-mho/cm	600	1340	630	1348	374	472	-	-
Turbidity	NTU	1.1	1.5	1.2	1.8	2.1	1.6	1	5
Total Solids	Mg/l	362	798	388	789	232	292	-	-

Parameters	Unit	Sampling locations						Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Borewell water at Crusher Plant, Harishankar Road	Office Complex, Kantabniji	Muribahal Railway Station	Harishankar Railway Station	Turekela Railway Station	Rehenbata Railway Station		
Suspended Solids	Mg/l	8	12	10	13	14	6	-	-
Total Dissolved Solid	mg/l	354	786	378	776	218	286	500	2000
Total Hardness as CaCO <sub>3</sub>	mg/l	258	508	264	242	154	208	200	600
Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND	0.01	0.03
Chlorides as Cl	mg/l	162	345.9	162.9	336	94.8	125.8	250	1000
Magnesium (as Mg)	mg/l	3.9	4.9	5.3	3.9	2.9	3.9	30	100
Sulphate (as SO <sub>4</sub> )	mg/l	9.2	136.8	8.8	29.6	5.8	6.4	200	400
Alkalinity (as CaCO <sub>3</sub> )	mg/l	132	218	144	218	124	132	200	600
Fluoride (as F)	mg/l	0.93	1.11	1.17	1.14	0.46	0.88	1.0	1.5
Nitrate (as NO <sub>3</sub> )	mg/l	ND	ND	ND	ND	2.8	ND	45	No relaxation
Total Coliform	MPN/100 ml	ND	ND	ND	ND	ND	ND	Absent	Absent

Table 9: Water Quality at different locations in subproject RT-1 ( Date of Sampling: 04.07.2014)

Parameters	Unit	Sampling locations			Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Tap Water at Loni Camo	Drinking water at Daund Office Complex	Drinking Water at Gulbarga Camp Site		
pH		8.05	7.85	7.7	6.5-8.5	6.5-8.5
Conductivity	μ-mho/cm	844	814	860	-	-

Parameters	Unit	Sampling locations		Drinking Water at Gulbarga Camp Site	Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
		Tap Water at Loni Camo	Drinking water at Daund Office Complex			
Turbidity, NTU	NTU	0.1	0.1	0.2	1	5
Total Dissolved Solid	mg/l	598	580	612	500	2000
Total Hardness as CaCO <sub>3</sub>	mg/l	316	330	310	200	600
Calcium as Ca	mg/l	545	72.4	62.7	75	200
Magnesium (as Mg)	mg/l	43.68	36.2	37.23	30	100
Chlorides as Cl	mg/l	129	114.3	356.3	250	1000
Sulphate (as SO <sub>4</sub> )	mg/l	39.2	92	51.2	200	400
Alkalinity (as CaCO <sub>3</sub> )	mg/l	280	240	235	200	600
Fluoride (as F)	mg/l	1.35	1.10	1.15	1.0	1.5
Nitrate (as NO <sub>3</sub> )	mg/l	<2	<2	<2	45	No relaxation
Iron as Fe	mg/l	0.09	0.10	0.15	0.3	0.3
Chromium as Cr	mg/l	<0.03	<0.03	<0.03	0.05	0.05
Lead as Pb	mg/l	<0.001	<0.001	<0.001	0.01	0.01
Arsenic as As	mg/l	<0.01	<0.01	<0.01	0.01	0.05
Total Coliforms	MPN/100 ml	Nil	Nil	Nil	Absent	10

Table 10: Water Quality at Different locations in Construction Package PG-1 ( Date of Sampling: 30.05.2014)

Parameters	Unit	Sampling locations					
		Construction Package PG-2		Construction Package PG-3			
		Yadgir TSS Building	Krishna Workshop	Aspari Railway Station	Adoni Work shop	Desirable Limit IS 10500-2012	Permissible Limit in absence of Alternate Source IS 10500-2012
pH		8.25	8.26	7.29	8.02	6.5-8.5	6.5-8.5
Turbidity,	NTU	0.5	0.3	0.2	0.4	1	5
Total Dissolved Solid	mg/l	652	512	112	496	500	2000
Total Hardness as CaCO <sub>3</sub>	mg/l	192	202	22.2	208.1	200	600
Calcium as Ca	Mg/l	32.3	38.8	6.4	70.3		
Magnesium (as Mg)	mg/l	27	25.5	1.4	7.9	30	100
Chlorides as Cl	mg/l	138.2	94.9	20.5	44	250	1000
Sulphate (as SO <sub>4</sub> )	mg/l	172	62.9	27.8	19.5	200	400
Alkalinity (as CaCO <sub>3</sub> )	mg/l	173.7	246.4	40.4	345.4	200	600
Fluoride (as F)	mg/l	BDL	1.0	BDL	0.14	1.0	1.5
Nitrate (as NO <sub>3</sub> )	mg/l	1.1	0.6	BDL	0.6	45	No relaxation
Total Coliform	MPN/100 ml	Absent	Absent	BDL	Absent		

Table 11: Water Quality at Different locations in Construction Packages PG-2 and PG-3 ( Date of Sampling: 23.07.2014)



**c. Noise level**

The equivalent noise level has been recorded at different locations in subprojects HT-1, HT-3, DG-1 and ST-1 during last 6 months. At all the major locations the equivalent noise levels were found within the permissible limit for the industrial area. The equivalent noise level at different locations in different subprojects is presented in following table

S. No	Project/Subprojects	Location	Date of monitoring	Equivalent Noise level (day time) LeqdB(A)	Equivalent Noise level (nighttime) LeqdB(A)	Prescribed limit LeqdB(A)	
						Day time	Night time
I. Daund-Gulbarga Project (DG)							
1.	Package DG-1	Near Bhalawani – CH 421.000	18.04.2014	55.9	38.7	75	70
		Washimbe Section- CH:319.700	18.04.2014	62.2	37.5	75	70
		Bosare Village- CH:378.000	18.04.2014	53.5	49.9	75	70
		Near Batching Plant at Bridge No.407/1	18.04.2014	57.9	48.2	75	70
2.	Package DG-2	Tilathi Camp site	23.09.2014	54.2	48.6	75	70
		Hotgi Construction Site	23.09.2014	59.4	46.4	75	70
		Stone Crusher Plant, Dudhani	23.09.2014	57.8	47.2	75	70

S. No	Project/Subprojects	Location	Date of monitoring	Equivalent Noise level (day time) LeqdB(A)	Equivalent Noise level (nighttime) LeqdB(A)	Prescribed limit LeqdB(A)	
						Day time	Night time
II. Hospet-Tinaighat Project (HT)							
1.	Package HT-3	At Staff Quarter	8.05.2014	48		65	55
		At Crusher Plant	8.05.2014	56		75	70
		At Batching Plant/ towards Agriculture field	8.05.2014	43		75	70
		On main road at Plant site	8.05.2014	59		65	55
		At haul road to Base Camp	8.05.2014	56		65	55
III. Sambalpur-Titlagarh Project (ST)							
1.	Package ST-1	Batching Plant	21.05.2014	70.0	59.3	75	70
		Base Camp	21.05.2014	58.6	45.2	65	55
		Bridge Construction site	21.05.2014	74.4	68.1	75	70
IV. Raipur-Titlagarh Project (RT)							
1.	Package RT-1						
		Office Complex, Kantabanji	1.07.2014	49.9		65	55
		Stone Crusher Plant, Harishankar Road	1.07.2014	49.4		75	70
		Major Bridge 325 at Ch. 199+690	2.07.2014	49.4		75	70

S. No	Project/Subprojects	Location	Date of monitoring	Equivalent Noise level (day time) LeqdB(A)	Equivalent Noise level (nighttime) LeqdB(A)	Prescribed limit LeqdB(A)	
						Day time	Night time
		Near Turekela Railway Station	2.07.2014	48.2		75	70
		Major Bridge 242 at Ch 148+000	4.07.2014	49.6		75	70
		Near Muribahal Railway Station	4.07.2014	50.6		75	70
		Near Rehenbhata Railway Station	5.07.2014	48.6		75	70
V. Pune- Guntakal Electrification Project (PG)							
1.	Package PG-1	Workshop at Loni Camp	30.05.2014	68.5	52.7	75	70
		Daund Camp Office	30.05.2015	49.5	40.8	55	45
		TSS Building Construction site, Daund	30.05.2015	59.6	46.9	75	70
		Workshop at Yevat Camp site	30.05.2014	57.9	46.4	75	70
		Gulbarga Camp Site	31.05.2014	46.2	40.8	55	45
2.	Package PG-2	TSS Building Construction site at Yadgir	24.07.2014	46.8	40.9	75	70
		Krishna Railway Station Workshop	25.07.2014	48.7	40.1	75	70
3.	Package PG-3	Aspari Railway Station	23.07.2014	48.1	40.2	75	70

S. No	Project/Subprojects	Location	Date of monitoring	Equivalent Noise level (day time) LeqdB(A)	Equivalent Noise level (nighttime) LeqdB(A)	Prescribed limit LeqdB(A)	
						Day time	Night time
		Adoni Railway Station Workshop	24.07.2014	51.6	40.0	75	70
Permissible Limits as per CPCB in Leq dB(A) Day Time & Night Time		Zone		Day Time		Night Time	
		Industrial		75		70	
		Commercial Zone		65.0		55.0	
		Residential Zone		55.0		45.0	
		Silence Zone		50.0		40.0	

Table 7: Noise monitoring results of different construction packages

### **5.6. Any additional environmental issues and impact observed during implementation which were not covered earlier in IEE**

No additional environmental issue or impact, that was not covered earlier in IEE, was observed in any of the subprojects in progress till date.

### **5.7. Environmental Enhancement Measures**

During the report period following additional activities have been carried out in different construction package packages as enhancement measures:

- Safety awareness training provided to local railway workers, line man and other staff in PG-1.
- Leveling of wasteland and Plantation at Koppal Railway Station in Package-HT-1 .

## 6. Conclusions

There is marked improvement in overall performance of the implementation of safeguard measures during reporting period as different agencies have taken number of initiative to address environmental problems as described below:

Periodical monitoring of air, water noise quality are going on in all the projects as per EMP and the monitoring results reflect that all the monitored quality parameters were within the prescribed limit and there is not significant load on pollution due to construction activities in these construction packages.

With constant efforts of PMC and PIU. There is marked improvement in supply of PPEs to the workers and their usage by construction workers at different work sites.

The PMCs have mobilized their Environmental Officer in their respective packages to ensure effective monitoring of implementation of EMP at site. There is improvement of record keeping on environmental safeguards by PMCs after regular appointment of environment officer at the different projects.

The trainings given by the GC in the previous period has helped to improve documentation and maintenance of records on the sites.

The HIV/AIDS awareness camps were organized periodically during the reporting period.

In few construction packages RVNL in association with PMC has taken up environmental enhancement measures in the form of additional plantation, safety awareness campaign for track workers of railway, line man, railway signal staff, signal and telecom department of railway, etc.

RVNL has established environmental grievance redressal mechanism in the project. The informatory signboards have been installed in all the construction packages for receiving complains as a part of Environmental Grievance Redressal Mechanism. No public complaint has been received with respect to environmental matters during the reporting period.

With respect to the labour camps, general living and hygienic conditions have improved in all the packages. Attention is required for further improvement in some packages and sub-contractor's labour camps.

There are some other important areas of environmental safeguards require further attention which include NOC from Pollution Control Board for Stone Crusher plants in construction package DG-2, HT-2 and RT-1, NOC for Batching Plants in construction packages ST-1, RT-3, Borrow area rehabilitation activities in DG-2.

## Annexure I: Photographs







### Photographs indicating EMP Compliance Status in different projects

PHOTO CLIPS ON EMP IMPLEMENTATION AND SAFETY	
	
<i>Air Sampling at RT-1</i>	<i>Air Sampling at RT-1</i>
	
<i>Water Sampling at RT-1</i>	<i>Water Sampling at Office Complex in Kantabanji at RT-1</i>



	
<p><i>Air Sampling at Washimbe section in DG-1</i></p>	<p><i>Noise level monitoring at DG-1</i></p>
	
<p><i>Labour camp at Bridge site in DG-1</i></p>	<p><i>Toilet Units provided at Labour Camp in DG-1</i></p>
	
<p><i>Toilets and Bathroom units at Base Camp in DG-2</i></p>	<p><i>Labour huts at Tilati in DG-2 (requires improvement of facilities)</i></p>



	
<p><i>Separate Toilets for Male and Female Workers at HT-3</i></p>	<p><i>Labour Camp at RT-1</i></p>
	
<p><i>Spraying of insecticide at labour camp at RT-1</i></p>	<p><i>Collection of Solid wastes at Labour Camp in RT-1</i></p>
	
<p><i>Labour Camp built with prefab material at ST-1</i></p>	<p><i>Toilets with overhead water tank, septic tank with soakpits at Labour Camp in ST-1</i></p>



*Personal Safety during Dropping work at PG-1*



*PPE and Safe access at bridge site in DG-1*



*Tree Plantation at Koppal Railway Station yard in HT-1*



*Display board for addressing complaint related to environmental issues at HT-1*



*Petroleum products stored on impervious platform at DG-2*



*Fire fighting arrangements at batching plant in RT-1*



	
<p><i>Borrow area rehabilitated as agriculture field at HT-3</i></p>	<p><i>Rehabilitation of borrow area in progress at Km 191+640 levelled (converted to agriculture field) at RT-1</i></p>
	
<p><i>Leveling of Borrow area in progress at RT-3</i></p>	<p><i>Rehabilitation of borrow area (BA-7) at Ch 550/700 in progress at DG-2 (Developed as agriculture land)</i></p>
	
<p><i>New Safety fencing under construction at RT-1</i></p>	<p><i>Existing fencing require repairing work at DG-2</i></p>



	
<p><i>Periodical sprinkling of water to curb dust at RT-1</i></p>	<p><i>Obstruction less drainage at RT-1</i></p>
	
<p><i>Labours working at site without PPEs (require attention) at HT-2</i></p>	<p><i>Periodical medical checkup of workers at DG-1</i></p>
	
<p><i>AIDS/HIV Awareness Camp organised in the month of June, 2014 at RT-3</i></p>	<p><i>AIDS/HIV Awareness Camp organised in the month of September, 2014 at HT-1</i></p>



*Safety training at PG-1*



*Health Checkup camp organised in June, 2014 at HT-3*