



KARNATAKA NEERAVARI NIGAM LTD

**Karnataka Integrated and Sustainable
Water Resources Management Investment Program**

ADB LOAN No. 0085-IND/LOAN No. 3172

Safeguard Monitoring Report

October 2016-March 2017

for

**Modernization of Gondi Irrigation System,
Karnataka**



Project Management Unit, KISWRMIP
Karnataka Neeravari Nigama Ltd (KNNL)

Project Support Consultant
SMEC International Pty. Ltd. Australia
in association with
SMEC (India) Pvt. Ltd.



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ABBREVIATIONS

ADB	-	Asian Development Bank
ASI	-	Archaeological Survey of India
CPCB	-	Central Pollution Control Board
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
CEMP	-	Construction Environmental Management Plan
EMMP	-	Environmental Management and Monitoring Plan
GoI	-	Government of India
GoK	-	Government of Karnataka
HWHAMA	-	Hampi World Heritage Area Management Authority
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination
IUCN	-	International Union for Conservation of Nature
KNNL	-	Karnataka Neeravari Nigam Limited
KSPCB	-	Karnataka State Pollution Control Board
MFF	-	Multi-tranche Financing Facility
MoEFCC	-	Ministry of Environment, Forests and Climate Change
NP	-	National Park
OM	-	Operations Manual
PA	-	Protected area
PIU	-	Project Implementation Unit
PMU	-	Project Management Unit
PSC	-	Project Support Consultants
PUC	-	Pollution Under Control
REA	-	Rapid Environmental Assessment
SEIAA	-	State Environment Impact Assessment Authority
SPCB	-	State Pollution Control Board
SPM	-	Suspended Particulate Matter
SPS	-	Safeguard Policy Statement
UNESCO	-	United Nations Educational Scientific and Cultural Organisation
WALMI	-	Water and Land Management Institute
WLS	-	Wildlife Sanctuary

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SAFEGUARD MONITORING REPORT

1. INTRODUCTION

1.1 Project Background

- 1 The Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP) is proposed to be implemented with the financial assistance from Asian Development Bank (ADB). The program aims to enhance security of water resources through modernisation of existing irrigation projects/schemes, improved water resources management in the selected river basins and other associated infrastructure activities.
- 2 KISWRMIP is a multi-tranche financing facility (MFF) program and proposed to be executed in a period of seven years from 2014 to 2021 in two Tranches with the aim of modernization of irrigation infrastructure on three irrigation subprojects within the Tungabhadra (K-8) sub-basin. Tranche-1 envisages modernization of Gondi irrigation system whereas Tranche-2 envisages modernization of Vijaynagara and Tungabhadra Left Bank Canal systems (in part) and all associated infrastructure including flow measurement & telemetry system supply and installation, strengthening asset management and main system operation and maintenance (O&M) and capacity building of WUCS (Water Users Cooperative Society).
- 3 The Modernization of the Gondi Irrigation System is one of the components under Tranche-1 and consists of modernisation of channels and the associated infrastructure in the Gondi Irrigation System.
- 4 The Gondi Irrigation System is located in the Bhadravathi Taluk of Shivamogga District. The Gondi Anicut is built across River Bhadra located about 14.50 km downstream of the Bhadra Reservoir and 11.56 km from Bhadravathi Town. It is situated at a latitude 13°46' N and longitude 75° 41' E. There are two main canals originating from Gondi Anicut one each from Left Bank and Right Bank. Left bank canal is 14.5 km long with 20 DPOs for an atchkat of 212 ha and full potential is created under this canal. The discharge required in the canal is 0.56 cumecs (20 cusecs). Right bank canal is 74.40 km long with 16 distributaries and 130 DPOs to cater to an atchkat of 4388 ha. The discharge required in the canal is 7.50 cumecs (265 cusecs) in unlined condition. The Gondi Anicut canal system is unlined.
- 5 The Gross Command Area (GCA) is 5060 ha, the Cultivable Command Area (CCA) is 4600 ha and sanctioned atchkat is 4582.44 ha. The Gondi Irrigation System was constructed between 1916 and 1954. It lies within the larger and more recent Bhadra irrigation system but has its own supply from the Gondi Anicut. The system has deteriorated and water is no longer able to pass along the whole length of the right main canal resulting in the tail area of the Gondi system being dependent on return flows from the Bhadra system. This is, at best, an unreliable source of water and will reduce in the future as the Bhadra system is managed more efficiently. Hence, the project on modernization of the Gondi Irrigation System has been taken up under ADB funding.
- 6 Based on the Project Preparation Technical Assistance (PPTA) (ADB TA 7954-IND) Report, the following modernization activities have been taken up for the Gondi Irrigation System:
 - Repairs to the Gondi Anicut and canal headworks;

- Improvement of main canals and distributaries including provision of concrete canal lining to suit future water delivery requirements and upgrading canal access roads. Lining may be a combination of slip-formed channel and large precast units in order to minimize the duration of canal closures;
 - Repair / replacement of all canal structures including bridges and crossings, drainage inlets and relieving weirs, pipe outlets and provision of new structures such as cross regulators where necessary to support the future operational objectives. Ramps into canals for laundry and animal drinking will be provided;
 - Possible modification of current on-line storage (tanks) where feasible to become actively managed off-line storage and enhancement of existing off-line tanks for more pro-active management. Modification options identified and modernization going on.
 - Command area development (CAD) works comprising lined channels, low-pressure gravity supplied pipe distribution where technically feasible and drainage where required;
 - Provision of electronic flow measurement and telemetry at about 20 locations on the main canal and drainage system and flow measurement;
 - Capacity development of system operations staff and water users to enable them to effectively use the flow measurement system and provide a more efficient and equitable water distribution service more closely aligned with the farmers needs;
 - Agricultural extension and on-farm water management training to equip the farmers with the skills to use water more efficiently;
 - Develop managed conjunctive use of canal water, water stored in tanks and pumped groundwater and undertake small pilots of pressurised irrigation using gravity supply from the main canal with possible inter-linking to existing drip irrigation that uses groundwater.
- 7 In line with the requirements of the ADB Safeguard Policy 2009, an Initial Environmental Examination (IEE) for the project on Modernization of the Gondi Irrigation System was carried out as part of the PPTA. The IEE identified that the environmental impacts occur during the construction activities as listed below:
- Clearance of vegetation along the canal rights of way to provide access and working space for the construction activities;
 - Materials generated during excavation where necessary within the existing canals. The total excavation volume is estimated to be about 250,000 m³;
 - Filling of about 350,000 m³ to restore the canal cross section and access track. Fill material will either be suitable material from the excavation or from borrow areas;
 - Gravel surfacing of canal roads using material from suitable quarries or borrow areas;
 - Concrete lining either using mechanised paving equipment, precast concrete units or handplaced concrete. Concrete for paving equipment would be supplied by ready-mixed concrete but concrete for hand-placed lining will probably be mixed on site. Precast units would be stockpiled on site for a brief period before installation;
 - Reconstruction of canal structures using reinforced concrete;
 - Provision of either concrete field channels or pipes within the command area which will require temporary access over fields.

- The logistics associated with the construction work include extensive movement of trucks carrying soil, gravel for roads and either ready-mixed concrete or materials for concrete. Potentially there could be about 100,000 round trip truck movements of varying truck sizes;
 - The canals under modernisation do not pass through or immediately adjoin forest. The Gondi Anicut and Gondi Left Bank canal at the Anicut is within 1 km of a minor forest (sandalwood plantation) and 6 km of a reserved forest (and wildlife reserve) on the left side of the Bhadra reservoir, with the Bhadra Left Bank Canal and settlements in-between. The Gondi Anicut and the Right Bank Canal near the anicut are 2 km from a minor/State forest with settlements in between. It is 11 to 12 km from the Wildlife and Tiger Reserve with the Bhadra Right Bank canal and settlements in-between. Elsewhere the canal is more than 2.5 km from reserved forest with the Bhadra Right Bank canal and settlements in-between;
 - Modernisation works for each site will occur just once and activity at any one location will last a few days. Passing traffic will increase for most of that closure period. Overall, modernisation is expected to take place in 1 or 2 canal closure periods each year (mid May – mid July or December);
 - It is expected that about 213,000 m³ of material will be excavated from the canal. The excavated material is expected to be either used for construction purposes or disposed on adjoining fields.
- 8 Accordingly, the IEE recommended that the Modernization of the Gondi Irrigation System be implemented on the condition that the Environmental Management and Monitoring Plan provided in the IEE are adhered to and complied with fully by the Project Proponent for all phases of the project.
- 9 The objective of the implementation of the Environmental Management and Monitoring Plan is to reduce or even negate the negative impacts arising from the modernization of the Gondi Irrigation System project.
- 10 As a part the EMMP, it is required for the Project Proponent to prepare Monitoring Reports at regular intervals and submit the same to the relevant agencies. This Environmental Safeguard Monitoring Report has been submitted to reflect the progress achieved in the implementation of the EMMP since the selection of the Contractor to implement the Modernization of the Gondi Irrigation System Project.

1.2 Executing Agencies

1.2.1 Project Proponent

- 11 Karnataka Neeravari Nigam Limited
The Chief Engineer
Project Implementation Office
Upper Tunga Project Zone, Shivamogga

1.2.2 The Contractor

- 12 RPP Infra Projects Limited
Registered Office at:
SF No. 454, Raghupathynaiken Palayam, Railway Colony (Post),
Poondurai Road, Erode 638 002
Tel: +91 (424) 228 4077
Fax: +91 (424) 228 2077
Email: ao@rppiopl.com;
Website: www.rppiopl.com;

1.3 General Project Features

- 13 The overall objective of the project is to modernise the irrigation infrastructure of a 4,600 ha Gondi Irrigation System so that a fully functioning irrigation system is left in place and WUCS that are independent self-sustaining entities capable of fulfilling their responsibilities including irrigation management; equitable distribution of water to farmers; O&M of minor canal system and collection of irrigation water charges; and, one capable of interacting with service agencies including KNNL/CADA, Agriculture Department, Horticulture Department and other Departments to ensure that they receive necessary services.
- 14 The goal is to significantly improve water use efficiency coupled with an increase in agricultural productivity which in turn is expected to substantially improve the income of farmers. The project shall also address the fact that the Gondi canal has, for many years, received supplementary water as return flows from the adjacent Bhadra canal system but this source of water is diminishing as that system becomes better managed. Also, project shall pilot alternative distribution systems and shall have a fully-functioning WUCSs within the implementation period.
- 15 The four major project components include:
 - Modernization of the Gondi Canal system;
 - Improved O&M at all levels of the system;
 - Strengthening of KNNL and CADA System Management;
 - WUCS and agricultural development.
- 16 Specific interventions include:
 - Repairs to the Gondi Anicut and canal headworks.
 - Improvement of main canals and distributaries including provision of concrete canal lining and upgrading of canal access roads.
 - Repair/ replacement of all canal structures including bridges and crossings, drainage inlets and relieving weirs, pipe outlets and provision of new structures such as cross regulators. Ramps into canals for laundry and animal drinking will be provided.
 - Modification of current on-line storage tanks where feasible to become actively managed off-line storage and enhancement of existing off-line tanks.
 - Where feasible, remodelling of the drainage inflow and relieving weir arrangement to avoid water (and associated sediment) entering the main canals unless required.
 - Managed conjunctive use of canal water, water stored in tanks and groundwater where possible. Small pilots of gravity pressurised irrigation from the main canal.
 - CAD works comprising lined canals, low-pressure gravity supplied pipe distribution and improved drainage;
 - Provision of electronic flow measurement with telemetry at 20 locations on the main canal and drainage system and flow measurements at all outlets. Electronic flow measurement and control systems will also be provided for the Bhadra canal system and selected locations on other irrigation schemes in the K-8 sub-basin;

- Capacity development of main system operations staff and water users;
- Strengthening of WUCS for effective water management, agriculture and minor system O&M;
- Agricultural extension and on-farm water management training. Agricultural interventions to support implementation include: (i) soil fertility (ii) irrigation water savings and IWRM (iii) Cropping patterns and intensification (iv) Farm mechanisation (v) Chemicals and Pest Management (vi) Agricultural extension and communications (vii) Research and demonstration.

1.4 Project Implementation Schedule

17 The 7-year project is being implemented during 2014-2021 in two tranches: the first 4-year Tranche 1 to be followed by a 6-year Tranche 2 planned to commence after one year of Tranche 1.

18 Reporting Period: Upto March 31, 2017

19 Major works carried out include;

- Establishment of the Workers' Campsites;
- Establishment of Concrete Batching Plant;
- Desilting works;
- Construction of Canal lining and structures;
- Construction of Distribution structures.

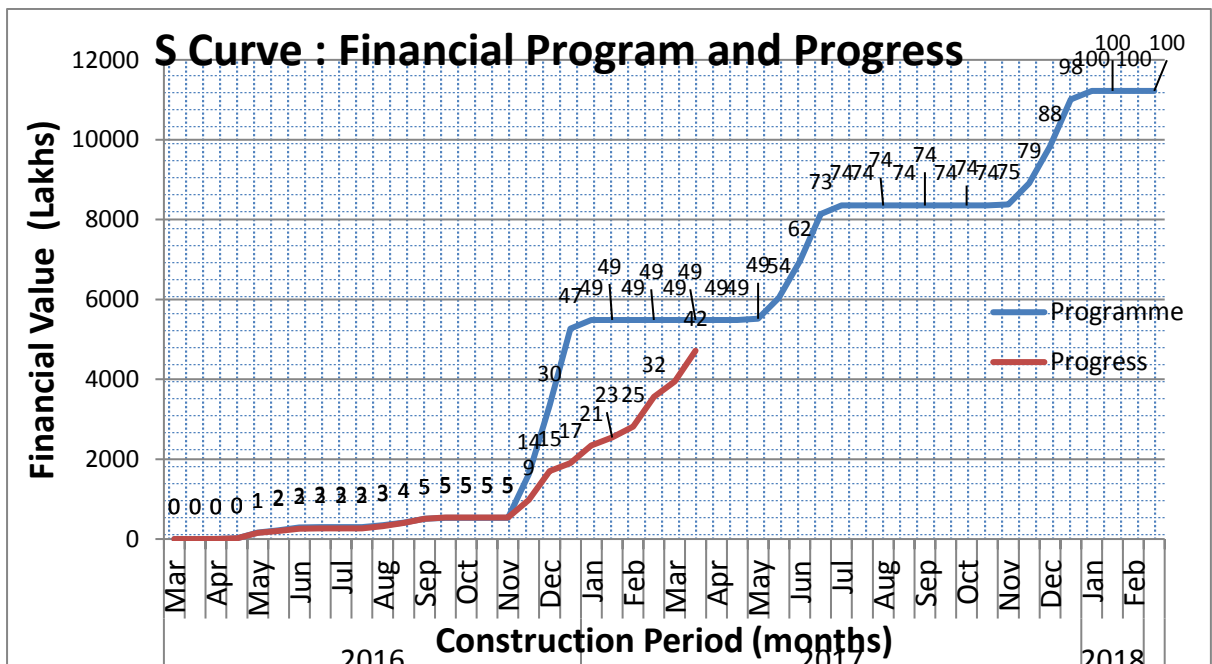
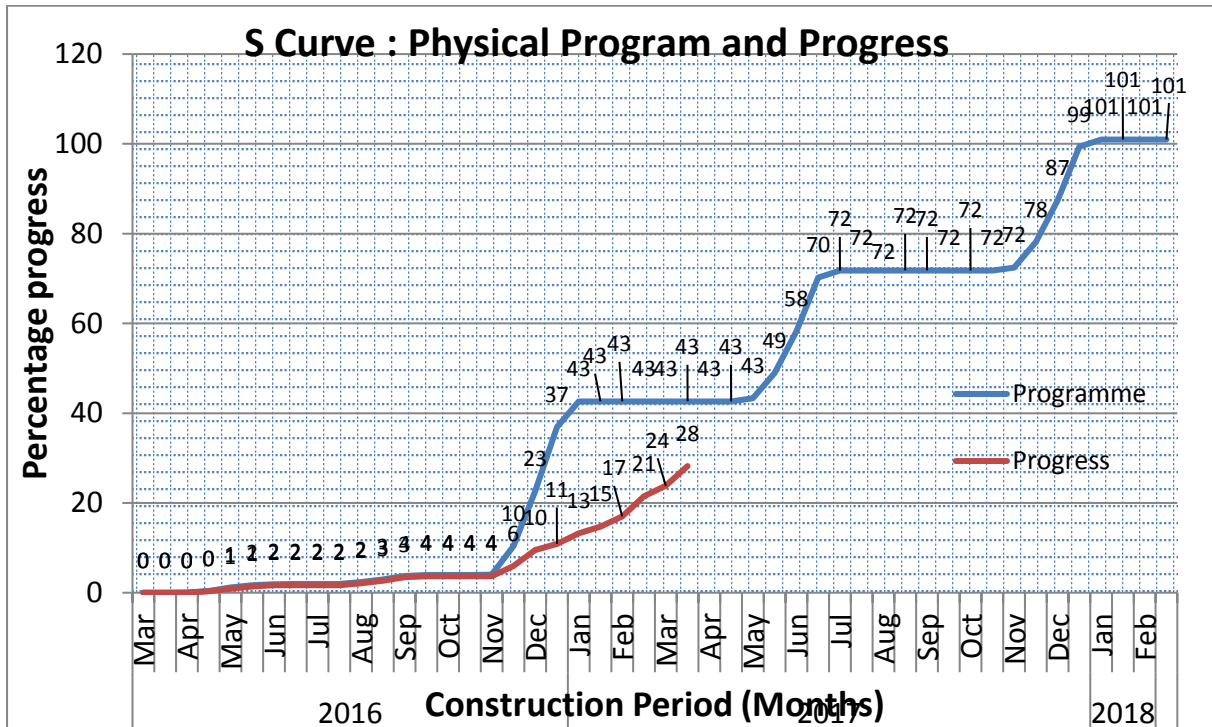
20 **Table 1.4.1** provides the status of the major works as on date on the Project:

Table 1.4.1: Physical Progress of Works as of March 31, 2017

S.No	Component	Lining (Km)			Structures (Nos.)		
		Estimate	Achievment		Estimate	Achievment	
		Km	Km	%	Nos.	Nos.	%
1	Left Bank Canal	14.735	12.82	87.00	74	66	89.19
2	Right Bank Canal	74.239	13.49	18.16	395	141	35.70
3	Distributaries	26.64	23.91	89.74	212	47	22.17

Overall Project Progress

The overall physical and financial progress of the project is 28% and 42% as can be seen from the S Curve shown.



1.5 Schedule of Implementation of EMMP

21 The EMMP implementation follows the Project Implementation Schedule and consists of three phases viz., pre-construction, construction and operational phases.

2. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

2.1 Evaluation of Environmental Management and Monitoring Plan Implementation – Pre-Construction Phase

- 22 Upon selection, the Contractor, RPP Infra Projects Limited (hereinafter referred to as RPP) signed an agreement with KNNL dated 26 February 2016 to implement the Gondi Irrigation System modernization project. KNNL had included the mandatory requirements on adhering to environmental safeguards in the Contractor's contract (Refer: **Appendix I**). Accordingly, the Environmental Management Plan (EMP) was submitted by RPP to the KNNL on 23 May 2016. The EMP was shared with the PSC on 03 June 2016 (Refer: **Appendix II**).
- 23 The Consultant conducted an evaluation of the EMP submitted by the Contractor. It was noted that Contractor's EMP identified major environmental issues, mitigation actions and agencies responsible for addressing the issues which were in-line with the EMP presented in the PPTA. However, the EMP submitted by the Contractor did not detail the Plan of Actions that the Contractor would implement in order to ensure that the mitigation actions are adhered to and the environmental issues are addressed adequately. Additionally, the identification of specific person responsible for implementation of the EMP was not done.
- 24 The Consultant had a meeting with the Contractor's representatives at the Contractor's Site Office on 28 June 2016 and recommended the following:
- The need to re-submit a modified EMP that reflected the plan of actions that the Contractor would carryout in order to adhere to the EMP prepared under the PPTA;
 - Record and provide information on all baseline measurement of noise at the construction site
 - Record and provide information on the baseline status of the site identified for quarries and borrow pits;
 - Record and provide information on the baseline status of the tree survey and the identification of the trees to be cut at the construction sites;
 - Provide information on the approvals obtained for locating the Campsite, Ready-Mix-Concrete Batching Plant, for utilising the village roads for truck travel and for disposal of excavated material in public or private lands.
- 25 Subsequently, a second meeting was held with the Contractor's representatives at the KNNL Executive Engineer office on 23 Aug. 2016 wherein the Consultant reiterated the actions to be taken by the Contractor to comply with the environmental safeguards requirements under the Contract and the need to submit a modified EMP immediately. Thereafter, the Contractor submitted a modified EMP on 30 Aug. 2016 which has been once again reviewed by the Consultant (Refer: **Appendix III**).
- 26 The modified EMP called the Construction Environment Management Plan (CEMP) submitted by the Contractor on 30 Aug 2016 is general in nature and does not cover the specific plan of actions that the Contractor needs to carryout in order to fulfil the role as stipulated in the Contract. However, the CEMP identifies the personnel responsible for implementing the EMP at the construction sites. The organizational chart presented by the Contractor is reproduced below:

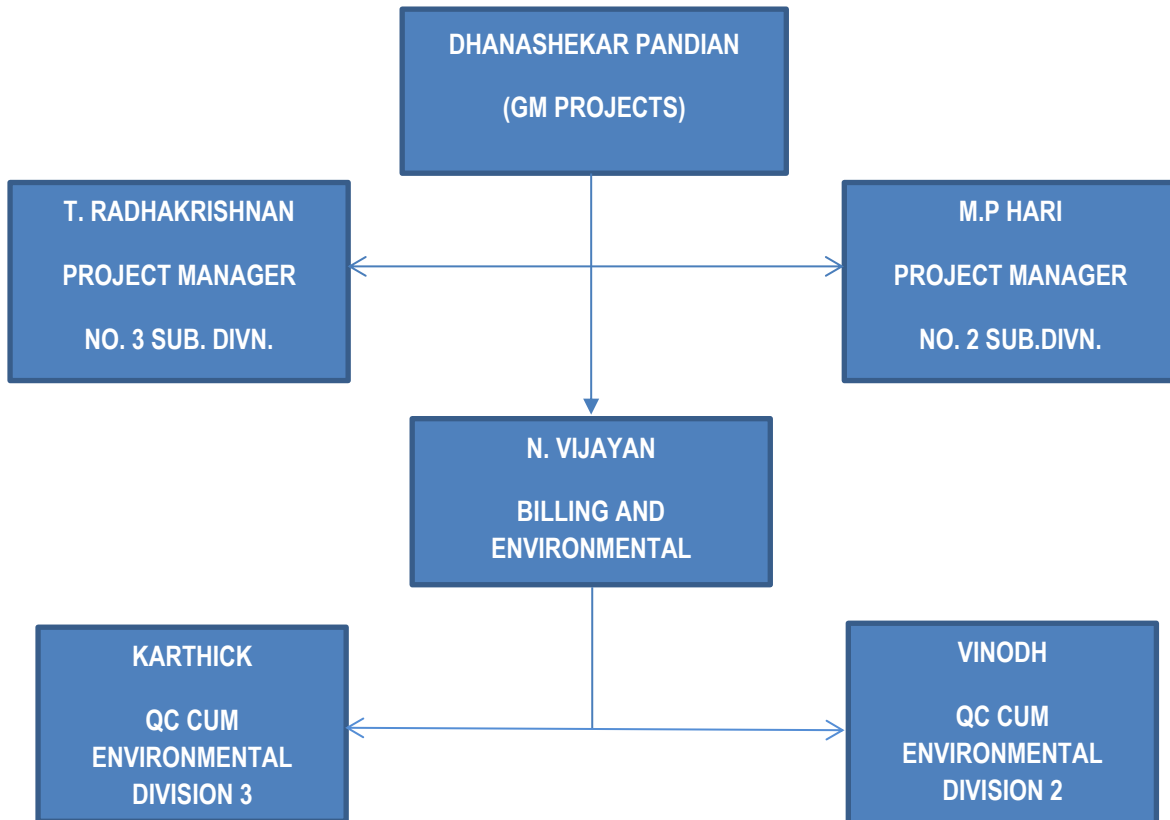


Figure 2.1.1: Contractor's Organization Chart for implementing EMP

2.2 Evaluation of EMMP Implementation - Construction Phase – Role of Contractor

- 27 The list of environmental issues for which the Contractor is responsible for has been listed in the IEE prepared under the PPTA. Accordingly, the Contractor has detailed the plan of actions that the Contractor would be carrying out to comply with the environmental safeguards guidelines stipulated under the funding for the project. However, the Contractor's Plan does not identify the specific activities that need to be carried out to mitigate the environmental impacts from the project. Hence, the Consultant has suggested the activities that need to be carried out along with the action list that the Construction Contractor has to adhere to in order to meet the requirements of the EMP (**Refer Appendix IV**).
- 28 The assessment on the Contractor's performance in EMP Implementation was conducted by the PSC Environmental Specialist. The TOR of the PSC Environmental Specialist is provided in Appendix V. While conducting the assessment, the support staff of the PSC have also been involved. The key set of actions that have been carried out by the Contractor to mitigate the environmental impacts during EMP Construction Phase are as follows:
- The Contractor has set up two batching plants at locations that have been approved by the local authorities. The batching plants have also obtained the Consent to Operate permit from the Karnataka State Pollution Control Board. Additionally, the Contractor has been utilising vehicles that have obtained the Pollution under Control (PUC) Certificates from the appropriate authorities.
 - At the location of the batching plants, worker camp sites have also been established. And, these worker camp sites have been provided with basic infrastructure like drinking water supply,

sanitation facilities and a kitchen mess where provision for mass cooking is also made. Septic tanks have been constructed to treat the sewage and composting units have been provided to treat the kitchen wastes. Dust generation arising from the movement of vehicles and operation of batching plants at the camp locations have been controlled through use of water sprinkling systems and construction of high compound walls. Materials have been stored at pre-designated spots at the batching plant location and appropriate safety sign boards have been placed to ensure safety of the workers. Fire extinguishers have been kept at prominent locations at the camp sites as a precautionary measure. Similarly, the Contractor has placed appropriate safety sign boards warning the nearby residents about the periodic movement of trucks and other vehicles. Further, the Contractor has been holding periodic consultations with the nearby community to take any additional measures that may necessary to ensure the health and well-being of the nearby community. All such deliberations have been recorded in a register maintained by the Contractor. Similarly, labourer's camp near the construction sites have been provided with basic infrastructure including drinking water supply, sanitation facilities and firewood for cooking.

- iii. One of the major components of the project is the desilting of the canals. The silt obtained from the desilting work is being voluntarily disposed by the nearby farmers on their own private lands. Towards this, the farmer is obtaining written permission from the farmers, as well. As such, the environmental impact arising from silt disposal has been largely mitigated. However, in a couple of instances, in the last six months, the silt contained contamination arising from an oil spill that had occurred prior to the project start. The contaminated silt was disposed by the Contractor at locations approved by KNNL and the KSPCB.
 - iv. Another major issue is the procurement of materials like stone jelly and sand for construction work. The Contractor has been procuring the stone jelly from government approved quarries only. Also, initially the Contractor was accorded permission to obtain river sand from approved vendors. However, later, the Contractor has decided in discussions with KNNL, to procure manufactured-sand (M-Sand) from approved vendors. This is a major decision that has had a significant mitigative effect on environmental impact arising from mining of sand from surface water bodies.
 - v. Another major natural resource requirement in the project is the filling material. The filling material have been obtained from borrow pits dug up at locations approved by the local village community and the KNNL. Also, the borrow pits are dug up to a depth such that the natural drainage in the area is not impacted. The Contractor is also taking up borrow-pit closure activities to maintain the environmental integrity of the borrow pit location.
 - vi. Most importantly, at the end of construction along a particular canal stretch, the Contractor is scheduling a closure meeting with the local community in order to ensure that community is satisfied with the measures taken by the contractor to safeguard the environmental quality and health and safety of the community during the construction activities. The deliberations of such closure meetings are recorded in a register maintained by the Contractor.
- 29 The detailed performance assessment of the EMP implementation of the Contractor is provided in **Appendix VI**.

2.3 Evaluation of EMP Implementation - Role of Other Institutions

- 30 The PPTA also defines the role of the institutions such as KNNL, AC-IWRM and other agencies in implementing the Environmental Management Plan. The key set of actions that have been carried out by the Contractor to mitigate the environmental impacts during EMP Construction Phase are as follows:

- i. KNNL has ensured that the environmental impacts are mitigated during all stages of the project by taking appropriate actions at specific instances. Towards this, initially KNNL made it mandatory for the selected Contractor to develop and adhere to an Environmental Management Plan. KNNL has also assisted the Contractor in working with other stakeholder agencies such as the Gram Panchayats, CADA, KSPCB and WUCS so as to enable the Contractor to easily comply with the objectives of the EMP.
- ii. For the macro-environmental issues identified in the PPTA viz., environmental flows in the rivers, water-use, fertilizer and pesticide use, on-land farm managements etc., no information has been made available to the PSC by the identified agencies for evaluating the progress.
- iii. On the on-land farm management activities and promoting water-use efficiency and optimum fertilizer and pesticide use, the PSC shall initiate work with the WUCS, once the construction work is completed.

31 The actions taken on those mitigation actions by the different agencies are provided in **Appendix VII**.

2.4 Environmental Monitoring Plan

32 The EMP provided in the PPTA provides a Monitoring Plan to be followed by various agencies in order to ensure that the agencies adhere to the requirements specified in the EMP and mitigate the environmental impacts arising from the project. The key set of actions that have been carried out by the Contractor to implement the environmental monitoring plan are as follows:

- i. The groundwater samples at both the campsites have been tested at a local environmental laboratory. The analysis reveals that the water is of good quality. In fact, the water from the borewell at the site is being filtered and provided as drinking water to the workers and labourers residing at the campsite and no untoward health concerns has been reported in any of the staff members or their family.
- ii. The Contractor is sourcing stone materials from government approved quarries and hence the implementation of the environmental management plan at the quarry sites is the responsibility of the quarry owners and overseeing their implementation is the responsibility of the Karnataka State Pollution Control Board. The information on the EMP implementation by the quarry owners at the quarry sites has been sought by the Contractor and the same shall be reported in the next Safeguard Monitoring Report.
- iii. The site for the borrow pits has been provided the local Gram Panchayats (i.e., village-level governing bodies). The closure of the borrow pits is being performed by the Contractor in consultation with the Gram Panchayats. At this time, no borrow pit has been fully utilised and hence the information on the borrow pit closure shall be reported in the next Safeguard Monitoring Report.
- iv. Tree removal in the encroached areas has been done in consultation with the local communities.
- v. Waste management at the campsites and construction sites has been adequate. At the campsites, soakpits have been constructed for liquid waste management and compost pits have been constructed to manage the kitchen wastes. At the construction sites, adequate arrangements to maintain sanitation and hygiene without affecting the local community.
- vi. Construction site management has been satisfactory with the contractor ensuring that there is no negative impact on the environmental media either during construction or at the the time of

construction closure. Towards this, the Contractor has been holding local consultations at closure time and securing their approval prior to vacating the site and moving to a different site location.

33 The actions taken on the implementing of the environmental monitoring plan is provided in **Appendix VIII**.

2.5 Social Safeguard Issues

34 The PPTA identifies a couple of social safeguard issues primarily concerning resettlement and indigeneous people issues that requires the selected Contractor to carryout certain activities that would address the issues effectively. The assessment on the social safeguard implementation is as follows:

- i. The system rehabilitation and modernization is unlikely to involve any need for land acquisition or resettlement and rehabilitation. Hence, both the Contractor and the other agencies have not developed any action plan to deal with the situation arising out of resettlement.
- ii. The system rehabilitation and modernization is unlikely to negatively impact the indigenous population. Hence, both the Contractor and the other agencies have not developed any action plan to deal with the situation arising out of resettlement.
- iii. The PSC has identified additional safeguard issues concerning Heath and HIV Aids that would affect the workers / labourers. Toward this, the PSC has suggested that the Contractor hold awareness workshops to the workers / labourers by availaing services of the local specialists in the sector. An update on the activites taken shall be provided in the next Safeguard Monitoring Report.
- iv. Similarly, the PSC has identified additional safeguard issues concerning Gender and Social Dimensions regarding the formation and functioning of the WUCS. Toward this, the PSC has suggested that the KNNL and CADA should monitor the working of the WUCS so that the Gender and Social issues at the community level are addressed effectively. An update on the activites taken shall be provided in the next Safeguard Monitoring Report.

35 The actions taken on the implementation of Social Safeguards is provided in **Appendix IX and X**.

3. CONCLUSIONS

- 36 This is the second report on environmental and social safeguards compliance of the Modernization of Gondi Irrigation System in Bhadravathi Taluk, Shimoga District, Karnataka Project. It covers the period from October 2016 to March 2017. The Gondi Modernization works estimated at 112 Crores which is part of the KISWRMIP is expected to be completed by February 2018.
- 37 Karnataka Neeravari Nigam Limited (KNNL) is the Executing Agency for the Project. The sole civil works contract package under the project was awarded to RPP Infra Projects Limited (RPP) in February 2016. Snowy Mountain Engineering Corporation (SMEC) is supporting KNNL as a Project Support Consultant (PSC) on the project. As of 31 March 2017, total physical and financial accomplishment of Gondi Modernization is about 28% and 42%, respectively.
- 38 Upon selection of the Contractor, RPP has submitted an EMP and followed it up with a CEMP that outlines the overall system under which the EMP shall be implemented by the Contractor. And, during the last six months, RPP has ensured that labourers and workers' campsites have access to water supply and sanitation services and firewood and LPG cylinders for cooking purposes. However, both the EMP and CEMP submitted by RPP did not provide for an action plan to address the various environmental and social issues which have been identified in the PPTA.
- 39 The PSC has had discussions with the Contractor's representatives on these issues and the first Safeguard Monitoring Report provided guidelines on the kind of activities that the Contractor needs to carryout to be in compliance with the loan covenants to ensure that the Contractor is complying with the proposed mitigation measures as described in the Environmental Management Plan (EMP) and the contract specifications.
- 40 The Contractor has incorporated the suggested plan of action for complying with the proposed mitigation measures as describes in the EMP and the Contract Specifications.
- 41 During the reporting period (i.e., between October 2016 and March 2017), the Contractor has implemented a number of mitigation measures to comply with the EMP. These include the following, among others:
- Obtaining permits and approvals from appropriate agencies for all the project related activities including establishing the batching plants, use of vehicles and equipment, material procurement etc;
 - Providing basic infrastructure to all workers and labourers including shelter, drinking water supply, sanitation infrastructure and cooking;
 - Organizing Medical Camps to conduct periodic health checkups of the employees and their families and ensure health and well being of the entire workforce;
 - Providing the construction workers and labourers with all safety equipment for their use during construction;
 - Providing appropriate signboards at batching plant site, construction locations and in the nearby community in regard of the construction activity and the precautions to be taken by the workers, labourers and the community during the construction period;
 - Obtaining permission from the farmers for disposing the silt on their farm lands;

- Contractor has been taking all precautions to ensure the environmental integrity of air, water and land during the construction period. No untoward incidents have been reported, thus far.
 - Carrying out Community Consultation at construction closure to ensure that all activities carried out during the construction period has not harmed the environmental integrity of the construction site or the nearby community;
 - The Contractor has been keeping a record of all environmental related activities.
 - Social safeguard issues have been effectively addressed by the Contractor.
- 42 In areas where there is shortfall, the Contractor has been instructed to initiate mitigation measures during this quarter. These areas include, among others:
- The Contractor has been instructed to periodically monitor the quality of air, water, noise and land at the construction sites and campsites for baseline, during construction period and post-construction period;
 - The Contractor has been instructed to hold regular workshops on Occupational Health and Safety Issues for Workers, Labourers and in some instances the local community, as well and ensure its implementation;
 - The Contractor has been instructed to obtain information from all material suppliers regarding the implementation of the EMP at their sites;
 - The Contractor has been instructed to increase safety sign boards especially in construction areas / campsites that are closer to habitation areas;
 - The Contractor has been instructed to maintain the O&M Record of all sanitation facilities;
 - The Contractor has been instructed to continue maintaining all the necessary documentation to be in compliance with the EMP.
 - The Contractor has been instructed to prepare a closure plan for all burrow pits and obtain permission from the local authorities for its implementation.
 - The Contractor has been instructed to continue taking the local community and farmers into confidence for the construction schedule to be adopted, disposal of silt and other waste materials and obtain their approvals at the time of completion of construction activity at a particular location.
- 43 All the above measures would go a long way in ensuring the implementation of the EMP.
- 44 The next Safeguard Monitoring Report for the period April to September 2017 shall be presented in the month of October 2017.

APPENDIX I

Contract Conditions That Identify The Environmental Related Responsibilities Of The Contractor

Section 5 - Particular Conditions of Contract 5-3

Appointment (if not agreed) to be made by	20.3	Executive Committee of Institution of Engineers, Karnataka Chapter, a neutral institution independent of both the contractor and EA
Arbitration	20.6 (a)	Institution whose arbitration procedures shall be used. Arbitration shall be conducted in accordance with the laws of the Employer's country
Place of arbitration	20.6	Bangalore, India.

Summary of Sections of the Works

Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 6.7)
e. Mobilization (site office, engineering personnel, equipment, surveys, precast yard)	3 months from commencement date	Indian rupees 50,000 per day
b. Construction of 35% of canal structures.	18 months from commencement date	Indian rupees 50,000 per day
c. Paving in canal during first canal closure for 35 km length.	12 months from commencement date	Indian rupees 100,000 per day
d. Construction of 100% of canal structures.	20 months from commencement date	Indian rupees 50,000 per day
e. Paving in canal during second canal closure for total canal length.	22 months from commencement date	Indian rupees 100,000 per day

For ADB Standard Bidding Document and Signature: *Ramakrishna*
 Ramakrishna Enterprises Ltd. And
 Ramakrishna Enterprises (P) Ltd., (M)

Procurement of Works: *Deel*
 Single-Stage Two-Envelope
 HS2 BHADRAVATHI
 HS2 HS2 HS2

Section B - Particular Conditions of Contract

B-5

Part B - Specific Provisions

The Particular Conditions of Contract (PCC) Part B - Specific provisions, is to amend or for additions to the General Conditions of Contract (GCC-Section 7). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

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For (Signature)
 Ramalinga
 ADB Standard Bidding Document (S) Ltd., (M)

(Signature)
 No. 4, BSR...

Procurement of Works

Single-Stage, Two-Envelope

Authorized Signatory.

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Section 8 - Particular Conditions of Contract

4.16 Transport of Goods.

The contractor shall adequately record the condition of roads, agricultural land and the other infrastructure prior to the start of transporting materials, goods and equipment and construction.

The contractor shall comply with all applicable national, state and local environmental laws regulations.

4.18 protection of the environment.

The contractor shall a) establish an operational system for managing environmental impacts b) carry out all of the monitoring and mitigation measures set forth in the initial environmental examination/Environmental management plan and (c) allocate the budget required to ensure that such measures are carried out. The contractor shall submit semi annual reports on the carrying out of such measures to the employer.

More particularly the contractor shall comply with (i) the measures and requirements set forth in the initial environmental examination & the environmental management plan attached here as Appendix ; and ii) any corrective or preventive actions set out in safe guards monitor implementation of the initial environmental examination and the environmental management plan.

The Contractor shall allocate a budget for Compliance with these measures, requirements and actions.

4.21 Progress reports;

Monitoring the obligations in Sub clauses 4.18, 6.4, 6.7 and 8.21.

6.4 Labour Laws;

The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline.

The contractor shall (a) provide equal wages and benefits to men and women for work of equal value or type (b) ensure that at least 20 % of women are employed in water resources management.

[Signature]
 For **Kamalinam** *[Signature]* **Direct Ltd And**
Co. (P) Ltd., (JV)

Single-Single, Two-Envelope

Authorized Signatory.

[Signature]
 Executive Engineer

No. 4, BRLBC Division

BHADRAVATHI

Procurement of Works

ADB Standard Bidding Document

HSH

[Signature]

Section B - Particular Conditions of Contract

8-7

4. The Contractor

4.7 setting out

The contractor shall comply with (i) the measures and requirements set forth in the resettlement plan attached here to as appendix to the extent of corrections; and (ii) any corrective or preventive actions set out in Safeguard Monitoring reports that the employer will prepare from time to time to monitor implementation of the resettlement plan.

The contractor shall allocate a budget for the compliance with these measures, requirements and actions.

4.12. Un foreseeable physical conditions:

In addition to notice of any unforeseeable physical conditions the contractor shall provide the Engineer with a written notice of any unanticipated environmental or resettlement risks or impacts that during construction, implementation or operation of the plants / permanent Works, which were not considered in the initial environmental examination, the environmental management plan or the resettlement plan attached here as Appendix through Appendix

For RFP is [Signature] Project Ltd. And
Ramalingam [Signature] Co. (P) Ltd., (JV)

ADB Standard Bidding Document

[Signature]
Executive Engineer

Procurement of Works No. 4, BRILBC Division

M85 BHADRAVATHI

421/2016 439

APPENDIX II

Initial Contractor's Environmental Management Plan



RPP Infra Projects Ltd

Lr.No:RPP/GMS/Site/2016/014

Date: 23.05.16

To,
The Executive Engineer,
KNNE ,No, 4 BRLBC Division
Bhadravathi.

Sub: Modernisation of Left Bank Canal & Right Bank Canal of Gondhi Anicut In Bhadravathi Taluk
Shimoga District -- Submission of Environment Management Plan -Reg_

Ref: : Agreement no:48 /2015-16 dated-26/02/2016

Sir,

With reference to the above subject we are submitting the Environment Management Plan .

This is for your kind information
Thanking you and assuring of our best services at all times.

Enclosed copy page 1-6

For RPP Infra Projects Ltd,


Authorized Signatory

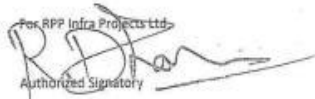


Regd Office : S.F. No. 454, Raghupathynaiken Palayam, Railway Colony (Post), Poondurai Road, Erode - 638 002.

Tel :+ 91 424 2284077, Fax : +91 424 2282077, Mail : ao@rppi.com

CIN : L45201TZ 1995PLC006113, Website : www.rppi.com

Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Reduced fodder and grazing lands	Identify areas which are specifically for grazing in the area and through community management ensure that they are not encroached upon or overgrazed Identify appropriate agencies, such as the Animal Husbandry Department to help with improving fodder availability and reduction in open grazing. Implementation of locally identified issues through guidance from PMU	PMU CAD and Institutions Cells AC-IWRM's IWRM plan	Yes
Chance finding of an archeologically or culturally important site.	The EMP should include: In the event that such sites are encountered, all work that may be underway or planned in the area should be stopped and discussed with District Commissioner for further action Ensure that the construction company and supervising consultants have an understanding of archaeological concerns in the area Ensure that any important archaeological area is well identified and demarcated and that required actions are specified in a detailed management and mitigation plan so that no damage takes place to it	PMU Institutions Cells	Yes
Reduced aesthetics due to quarries on river bed, hills etc.	Rehabilitation of all sites must be undertaken once work is completed and plans developed well in advance of construction activities. Include rehabilitation requirements in the construction company contract to ensure it is taken up and appropriate budget should be made for the activity Avoid any quarrying work in an aesthetically important/significant place During design phase once any sites are identified, ensure budget to rehabilitate sites are identified and remediation actions included in EMP. All construction related activities should be included in the construction consultant's contract as clauses, including material procurement.	PMU Irrigation and Institutions Cells.	Yes
Loss of local agribiodiversity	Identify methods of preserving and cultivating local agricultural species and cultivars. Work towards breed improvement of local agricultural species and possible methods to improve income from the sale of produce of local agri-biodiversity	PMU Institutions Cell	Yes
Conflict with local fisheries	Do not undertake any construction/quarrying activities in areas where local fish populations are important. In case unavoidable, identify methods to reduce impact after discussion with local population and also consider ways to compensate for loss Consider and include fish passage opportunities at anicuts	PMU Institutions Cell	Yes
Reduced access to water for domestic, livestock and other purposes from canal system due to design changes and increased water use efficiencies	Identify water needs for different users and in consultation with them develop appropriate design changes to ensure access to identified groups at required places	PMU Institutions Cell	Yes
Disruption of traffic routes due to sighting of infrastructure	Identify any landing and other sites along the planned infrastructure site. Where possible consider design changes to ensure there are no problems faced by the local population. Where not possible in consultation with the local population create alternate facilities.	PMU CAD and Institutions Cells	Yes
Increase in agricultural waste such as agrichemical waste	Undertake farm management education for farmers to ensure that they know how to dispose agrichemical waste in most appropriate way Explore with KVK's, Agriculture Department, local agrichemical shops and agrichemical companies possibilities of buy back system for agrichemical containers etc	PMU CAD and Institutions Cells WUCS and agricultural extension sub-project	Yes

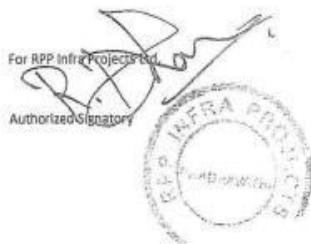
For RPP Infra Projects Ltd.

Authorized Signatory

6.6 Environment Management Plan

6.6.1 Below is the EMP for the project. This is based upon the findings of the impact assessment, a public consultative process, review of existing legislation and review of secondary information.

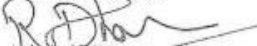
Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Project Design and Location			
Reduced environmental flows due to increased efficiency	Overall assessment of appropriate water needs for each sector, including environmental flows	AC-IWRM and River Basin Plans	Yes
Waterlogging or aquifer degradation due to project activities	Development of appropriate drainage structures and management measures, on-farm land management. Work with farmers to identify appropriate cropping patterns and agricultural usage given existing soils and drainage conditions. Identify and manage quarries such that they cause minimum if any damage to surface and ground water systems, and ensure that during quarrying there is minimum if any damage to aquifers and surface water systems	PMU Command Area Development (CAD) and Institutions Cells WUCS and agricultural extension sub-project	Yes
Water quality degradation due to existing agricultural practices – agri-chemicals and land management practices	Education to farmers on improved agricultural practices and use of agriculturals, on-farm land management practices	PMU CAD and Institutions Cells WUCS and agricultural extension sub-project	Yes
Increased soil toxicity, reduction in soil quality, soil exhaustion and erosion	Education to farmers on improved agricultural practices, onfarm land management practices	PMU CAD and Institutions Cells WUCS and agricultural extension sub-project	Yes
Lowering groundwater table	Identify appropriate groundwater management and conjunctive use plans and local level regulation systems based upon local aquifer needs	AC-IWRM's IWRM plans PMU CAD and Institutions Cells	Yes
Cutting of trees	Ensure design reduces need to cut trees. For all trees cut/removed, plantation should be at the ratio of 3 planted for every 1 cut. All plantation activities should consist of appropriate species for the area to be planted, in consultation with the Forest Department and also after understanding the local ecological needs. Include in project budget. Need to include in the construction contractor's contract. Ensure required permission is taken from the Tree Officer as identified in the Karnataka Preservation of Trees Act, 1976 prior to any tree cutting activity.	PMU CAD and Institutions Cells	Yes
Reduction in habitat for local fauna and flora.	Ensure all plantation activities are based upon the local fauna and flora needs, with no invasive species planted. Identify possible animal corridors and identify possible actions to reduce conflict – such as scheduling any work in any corridors to minimise conflict. Ensure that alien species or those inappropriate for the area are not planted in any animal corridor or fly path area. Identify appropriate local species for any firewood plantations. All construction activities should be included in the construction contractor's contract clauses	PMU CAD and Institutions Cells.	Yes
Human – animal conflict	Where possible identify appropriate cropping pattern, considering possible animal raid issues. Discuss with forest department. Avoid any activity in animal corridors during migratory season and do not create any permanent structure to obstruct it.	PMU CAD and Institutions Cells	Yes

For RPP Infra Projects Ltd.
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Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Change and degradation of wetlands due to waste dumping and expansion of agricultural lands	Identify important wetlands and monitor land use and condition Through the IWRM activities identify appropriate land management and conservation methods, and work with farmers to educate and ensure that wetlands are not degraded Work with farmers to identify appropriate land management and waste management systems at the village level	PMU Cells, SSTs, PSC environmental specialist	Yes
Reduced and degradation of habitats for species – both aquatic and terrestrial species	Work through a community system to identify wetlands, other habitats and local environmental assets Work with local community to ensure that cultivation is not extended into areas environmental assets Educate community on management of soil and agricultural usage Demarcate all areas through an IWRM plan for conservation and limitation of areas for agriculture.	PMU Institutions Cell AC-IWRM's IWRM plan	Yes
Increased aquatic weeds	Ensure appropriate drainage management to keep the canals and drains silt free and not allowing the disposal of any waste Work with farmers through farmer's education system to ensure appropriate application of agriculturals, including fertilizers Educate farmers on proper soil management and testing	PMU Irrigation and Institutions Cell	Yes
O&M waste – spoils from drainage system and canals	Identify appropriate waste management system for drain cleaning Weeds can be used, in consultation with farmers, for manure. Therefore, if farmers are interested a system for their use and disposal on farmlands at the time that drains are cleaned should be undertaken.	PMU Irrigation and Institutions Cell	Yes
Increased toxicity in environment and for people with more agricultural packages being reused	Farmer education on appropriate management of agricultural packaging. Where possible consider a buyback system for agricultural packages by the agricultural companies	PMU Institutions Cell	Yes
Non point source pollution of waterways	Work with and educate farmers on the best management of agriculturals Consider options for improving quality of NPS runoff	PMU Institutions and CAD Cells AC-IWRM studies	Yes
Multi-objective use of tanks and off line storages	Consult with users, study existing and planned uses and consider options for best management of the tank areas recognising their multiple uses (eg. environment, irrigation water supply/control, weed collection, fishing, fringe grazing etc	PMU institutions and Cell AC-IWRM IWRM plans	Yes
Increase waste from fields due to micro-irrigation system	Educate farmers on best management of systems to be used, where to get good quality material that does not break down and spoil fast, its maintenance and proper disposal of waste	PMU Irrigation and Institutions Cells WUCS and agricultural extension sub-project	Yes

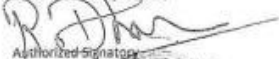
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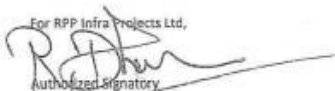
Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Damage to infrastructure.	Vehicles to take pre-identified routes. Do not overload vehicles or use vehicle loads higher than transport infrastructure capacity or dimensions. Identify possible telecommunication lines or other structures over roads (eg. overpasses, tunnels) in the area prior to starting work to ensure that they are not damaged due to any construction work. If damage to infrastructure occurs, plan for any repair and maintenance that might required. The contractor through the contractor clauses will need to maintain all infrastructure in its original state.	To be ensured by construction company through contract clauses, monitoring PMU environmental specialist	Yes
Workers / labour camps and facilities.	Provide appropriate shelter and other facility for any labour brought from outside. Do not use hazardous materials like asbestos for construction of shelters or temporary housing, no conflict with local population due to labour camp. Provide sanitation and waste management facilities	Ensure To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Conflict with labour camps on resources.	Select any labour camp sites to ensure least possible conflict with local population – e.g., at a distance from where population density is high. Ensure labour camps have required infrastructure like water supply, sanitation facilities and energy. Develop appropriate waste management system, and rehabilitate the site after construction is over Do not develop any construction site – material storage, labour camps etc without consultation with the local population. Where possible do not use grazing lands etc for labour and material storage	To be ensured by construction company through contract clauses both for work carried out by them, monitoring PMU environmental specialist	Yes
Chance findings – archaeological sites.	Stop all work that may be underway or planned in the area and discuss with District Commissioner for further action Ensure that the construction company and supervising consultants have an understanding of archaeological concerns in the area Ensure that any important archaeological area is well identified and demarcated and that required actions are specified in a detailed management and mitigation plan so that no damage takes place to it	To be ensured by construction company through contract clauses, monitoring PMU environmental specialist	Yes
Project Operation			Yes
Increased agricultural waste in water and water bodies	Ensure through farmer's education that waste is not disposed in water bodies and appropriate waste disposal systems are found and used	PSC environmental specialist with WUCS Service Support Teams (SST)	Yes
Increased agrichemicals in surface and ground water systems, and reduced quality of return flows	Farmers education on proper use and management of agrichemicals, including their waste Ensuring a farmer-friendly method for disposal of agrichemical waste, as identified during project design	WUCS Service Support Teams (SST) with PSC environmental specialist	Yes
Waterlogging and reduced drainage	Identify appropriate cleaning and maintenance of drainage system, including disposal of waste removed. Improved agriculture practices – understanding plant needs and use of irrigation water as required through improved understanding of the system Identify appropriate systems for the management of drains and disposal of silt Ensure there is a budget for the management of drains and the budget is spent on it	PMU CAD and Institutions Cells	Yes
Soil degradation due to poor on-farm management, intensive agriculture, soil exhaustion and soil toxicity due to chemical usage and lack of knowledge among farmers	Identify appropriate soil management and soil testing systems and educate farmers on it. Ensure that farmers remember through repeated information sharing on good agriculture and soil management practices	PMU CAD and Institutions Cells	Yes

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Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Pollution from construction activities	Proper storage and disposal of material, including hazardous material, to avoid contamination, spills and accidents. If there are no waste disposal systems in the area, the material should be sent to a pre-identified disposal site. No dumping in river/water bodies, or labour camps/temporary or material storage sites on river bed. Vehicles properly maintained and serviced – and not washed or serviced, at site. Proper waste storage and disposal. Sites restored after work completed. Avoid refuelling at project site. For refilling at site, demarcate site, ensure surface made impermeable. Ensure vehicles are properly maintained Ensure vehicles are covered when carrying raw material Reduce blasting and other similar activities that may create dust to the extent possible Use sprinklers etc to settle dust where needed	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Accidents and health concerns of local population	Ensure that all construction sites are cordoned off and only permitted people enter Ensure appropriate signage at construction, mining sites Ensure that where blasting takes place, such as at mines, timings are known and followed In case of accident ensure required first aid etc is given immediately	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Compaction of soil/soil erosion for access to various sites and quarries—such as metal quarries for aggregate, murrum quarries and sand mining areas	Rehabilitate all sites after construction/quarrying activities are completed such as ploughing and plantation. Plan site prior to starting excavation activities, including slope stabilization, identify and develop appropriate slope aspect during excavation and contouring to ensure slope stability after earth borrowing activities are completed. Only clear vegetation that must be cleared As far as possible use already identified roads and routes to access various sites	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Impact on local fisheries and fish spawning and aquatic fauna.	Do not undertake any construction/ quarrying activity in rivers during the spawning period of the different fish species. Discuss with local population before starting any construction activity to ensure minimum disturbance	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Disturbance to local population.	Identify and enforce appropriate access routes, speed limits and timings with community. Identify appropriate material storage areas to ensure least possible disturbance. Consult with local population on hours of operation and any entry of private land Provide signage, demarcate and cordoning of areas to reduce access to construction site and to avoid accidents. Control traffic dust Ensure appropriate site drainage. Restore areas after work is over. Minimize transportation of material through heavily populated areas. Only use road worthy vehicles.	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes
Reduced access to sites for local population, construction sites or material procurement sites	Identify alternate routes for project construction activities where possible If not possible, in consultation with the local population identify appropriate alternatives for them and provide required facilities	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement form other agencies, monitoring PMU environmental specialist	Yes

For RPP Infra Projects Ltd,

 Authorized Signatory

Environmental Issue	Mitigation Action	Project Responsible Authorities	Project Responsibility Sign
Increased vector habitats and diseases	Ensure adequate drainage needs are identified, designed and there maintenance is also identified If required, develop extra drainage plans for various structures to ensure there is no waterlogging	PMU CAD and Institutions Cells	Yes
Reduction in food supplements – fish and wild berries etc	Identify any use of lands where structure is planned, or fishing areas and consider how best to take into account people's needs Through an IWRM approach identify various needs of lands not presently occupied by agriculture and ensure that these uses are accounted for any land use and management plan developed for the area	PMU Institutions Cell	Yes
Increase in agri-industrial waste from local factories (eg. rice or sugar mills)	Review waste management processes and prepare better plans as required.	PMU Institutions Cell with State Pollution Control Board	Yes
Project Construction			
Sand mining and possible change in river course and river scouring	Identify appropriate areas for taking river sand, based upon existing regulations, but also ensuring that there is no excess sand taken. Rehabilitate land after work is finished to ensure least damage to area	Through appropriate contract clauses of construction agency under supervision of PMU Environmental specialist	Yes
Waterlogging from poor site planning and management	Ensure proper site planning takes place and site management is adequate – to be put into construction contractor's clauses	Contractor clauses of construction agency under supervision of PMU Environmental specialist	Yes
Erosion due to sand and murrum mining and material procurement methods	Plan mining and procurement sites before starting work to keep in mind any erosion issues that may occur Rehabilitate site after finishing work, as appropriate	To be ensured by construction company through contract clauses from agency providing raw material, monitoring PMU environmental specialist	Yes
Disturbance to wildlife species due to construction and material procurement activities, including in fly paths and corridors	Discuss with local population before starting any construction activity to identify possible concerns to ensure minimum disturbance Only take up work in daytime In case of local animal movement or migrations, ensure that work does not take place when the migration is underway Do not create blockages by storage, labour camps etc in animal corridors Near sensitive areas ensure that work adheres to local regulations and also use least destructive methods, and rehabilitate area after finishing work	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement from other agencies, monitoring PMU environmental and gender and social specialists	Yes
Occupational safety and construction hazards.	Provision of protective gear and safety equipment as required. Signage, site plan, lighting and restricted entry. Vaccination and preventive health measures as required, and first aid at site. Facilities for handling emergencies at site. Restricted access to hazardous materials. Personnel handling hazardous material properly trained, licensed and with sufficient experience. As needed have toilet and drinking water infrastructure, at construction sites.	To be ensured by construction company through contract clauses both for work carried out by them and for any procurement from other agencies, monitoring PMU environmental specialist	Yes

For BPP Infra Projects Ltd.

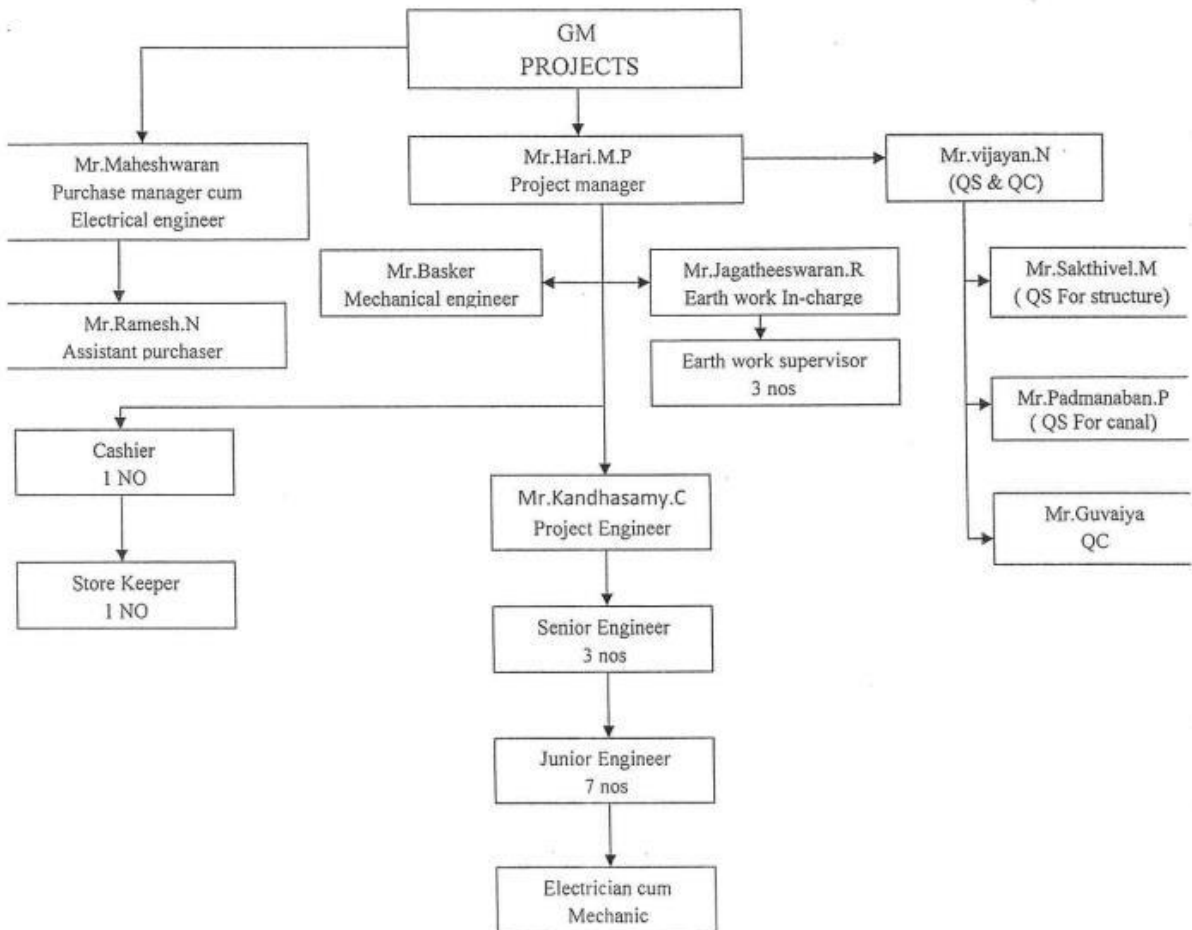
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RPP INFRA PROJECTS LIMITED

ORGANISATION CHART

SUB DIVISION - II



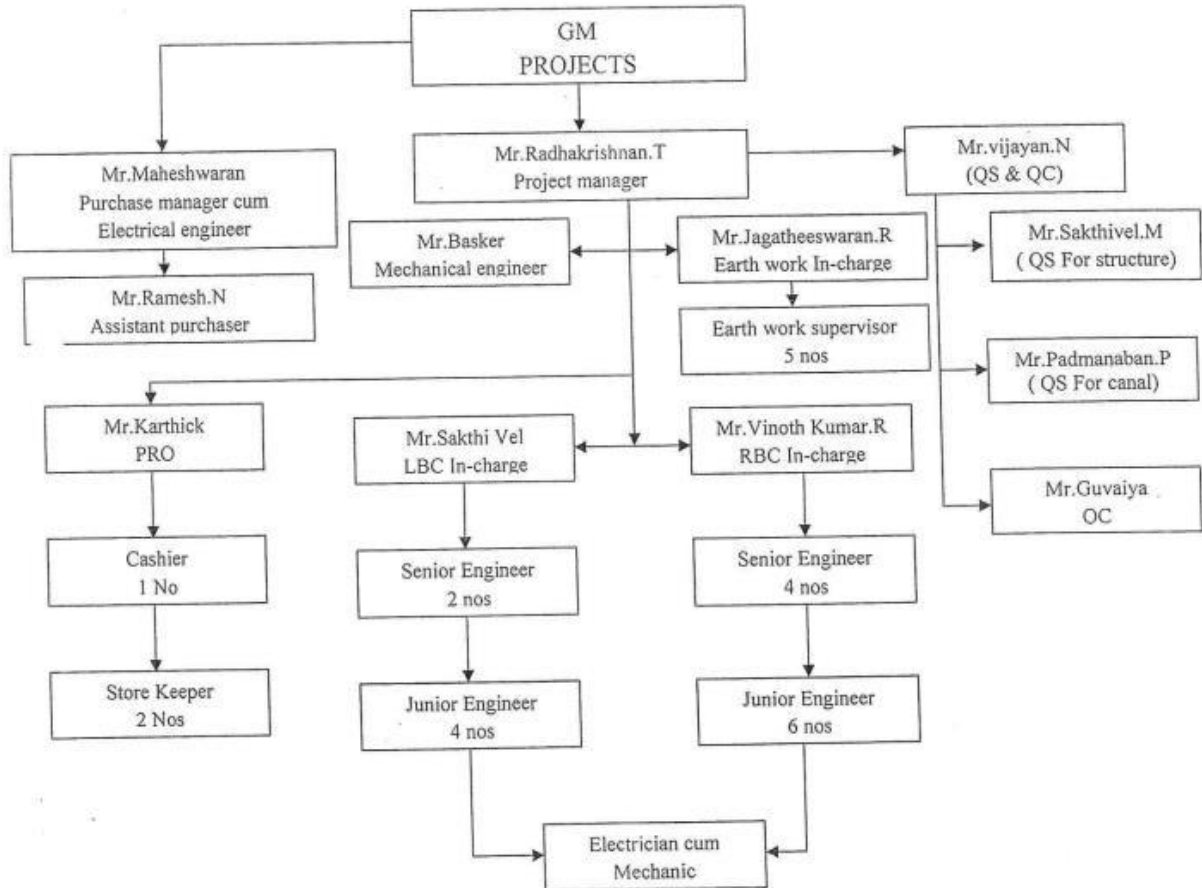
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RPP INFRA PROJECTS LIMITED

ORGANISATION CHART

SUB DIVISION - III



R. D. Kar



APPENDIX III

Modified Contractor's Environmental Management Plan

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Name of Work: Modernisation of Gondhi Main Canal and its
Distributaries in Shivamogga District of Karnataka State, India

AG No. 48/2015-16 Dated: 26.02.2016
(ADB Loan No. MFF 0043253-IND-Loan No 3172)

M/S RPP INFRA PROJECT LTD AND M/S RAMALINGAM
CONSTRUCTION COMPANY (P) LTD. (JV), SF 454,
RAGUPATHINAIYAKEN PALAYAM, POONDURAI MAIN ROAD,
ERODE-638002, TAMILNADU, INDIA REPRESENTED BY
MR. R.P. ARUL SUNDARAM.
E-MAIL: PROJECT@RPPIPL.COM

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1. Construction Environmental Management Plan (CEMP)

1.1 Introduction

This section explains what is meant by a Construction Environmental Management Plan (CEMP), what it would contain, how it would be used and sets out the procedures and responsibilities associated with its implementation. This section is a general overview of the CEMP only; details of measures which would be included in the CEMP and associated documents for the Hayle project are set out in the mitigation sections of each specific technical chapter of this Environmental Statement.

1.2 Introduction to EMS

An Environmental Management System (EMS) establishes what an organisation needs to do in order to manage itself so as to meet its environmental, economic and social goals. A typical EMS model is represented diagrammatically below.

EMS Model

Policy

Planning

Implementation

Checking Corrective Action

Management Review

Based on the P-D-C-A Model, Plan-Do-Check-Act

Figure 1—1 Typical EMS model

1-1 Policy

An Environmental Policy for the project will be developed by the Contractors senior management team. The environmental policy, as defined by ISO 14001, is a statement by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets. It will be communicated to all employees and sub-contractors via site inductions and tool box talks and will be displayed on various notice boards throughout the construction sites. The policy should also be available to the public.

1.2.2 Planning

The core document of the EMS is the Environmental Management Plan (EMP). The EMP is the lead environmental management document that defines the procedures for achieving the objectives set out in the Environmental Policy and identified environmental performance targets for the project.

The EMP provides the framework for which commitments made in the ES or any requirements of planning conditions or Section 106 agreements can be realised. The EMP outlines the contractors approach to environmental management throughout the construction phases with the primary aim of reducing any adverse impacts from construction on local sensitive receivers.

1.3 Contents of the EMP

There are a number of key features that would be included in the EMP and they are briefly discussed in this section. A more detailed list is provided in the suggested layout for the EMP provided in Section 17.3 of this document.

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The EMP will identify the project management structure and clearly identify the roles and responsibilities with regard to managing and reporting on the construction phase environmental aspects. More detail on roles and responsibilities is provided in Section 1.2.4

An Environmental Risk Assessment will be undertaken when developing the EMP. The risk assessment identifies all aspects of construction that could have an environmental impact and assesses the potential risk and impact of that activity on the environment. Management controls are then devised to eliminate and/or minimise those identified impacts.

The assessment would address the potential impacts created during the temporary construction period (e.g construction dust and noise) and any permanent impacts (e.g disturbance to vegetation) that are influenced by construction methods. Specific environmental issues would be addressed in the EMP and strategic details on how these would be controlled across the project would be provided. A list of potential issues that will need to be addressed in the plan are provided below based on information provided in the Environmental Statement:

- Construction noise and vibration management
- Air quality including dust management
- Sustainable waste management
- Traffic management
- Archaeology and heritage management
- Water management (surface and groundwater)
- Management and protection of ecological resources (particularly relating to timing of certain works)
- Japanese knotweed management
- Contaminated land management

The EMP would set out objectives and targets for the project that are realistic and relevant for maintaining or improving environmental performance

A programme of monitoring, reporting and auditing of compliance in accordance with any obligations of the planning consent, licences and approvals should also be contained in the EMP to ensure that identified and appropriate control measures are effective

1.4 Roles and responsibilities

The line of responsibility for environmental management during the construction phase is shown in the organisation chart below. Descriptions of the key individuals with environmental responsibilities are described in the following paragraphs.

Key EMP = Environmental Management Plan

CMS = Construction Method Statements WI = Work Instructions (see section 17.5 for more details)

Figure 1—2 Roles and Responsibilities

1.4.1 Client's project environmental manager

The Client's Environmental Manager would be responsible for monitoring the performance of the project against statutory requirements and the agreed objectives and targets. Duties would include:

- review and approve the CEMP, prepared by the contractor, and specialist procedures and identify any areas for improvement
- Identify the environmental competence of all contractors (and sub-contractors) working on the project
- review method statements for environmental aspects and advise of any suggested improvements prior to work starting
- monitor construction activities to ensure that identified and appropriate control measures are effective and in compliance with the CEMP
- act as a main point of contact between the contractor and the client's project team on environmental issues

1.4.2 Contractor's project environmental manager

The project environmental manager would be responsible for coordinating and managing all the environmental activities during the construction phase. The project environmental manager would carry out the following duties:

- develop and review the CEMP, Construction Method Statements (CMS's), work instructions (WIs) and other specialist procedures
- identify environmental competence requirements for all staff working on the project and ensure delivery of environmental training to personnel within the project team
- review and improve method statements for environmental aspects prior to work starting
- monitor construction activities performance to ensure that identified and appropriate control measures are effective and ensure compliance with the CEMP
- act as main point of contact between the regulatory authorities and the project on environmental issues
- in conjunction with the site environmental representatives, overall monitoring of the programme for the environmental works, and provision of status reports as necessary
- provision of advice and liaison with the construction teams to ensure that environmental risks are identified and appropriate controls are developed and included within method statements
- assistance in the development and delivery of environmental training for site personnel and sub-contractors
- liaison with the clients environmental manager
- liaison with the project's public liaison officer
- management of the environmental monitoring programme, including noise, vibration and dust and review of the routine reports
- environmental audit of subcontractors and suppliers

1.4.3 Contractor's site environmental representative

The site environmental representative would report to the project environmental manager and would be directly involved in managing and co-ordinating environmental activities on-site. These would include:

- Assist environmental manager in developing and maintaining the CEMP, CMS, WIs and various registers and checklists
- Monitor construction activities to ensure that identified and appropriate control measures are effective and in compliance with the CEMP

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- Undertake weekly site inspections, initiate actions, complete a weekly environmental inspection report
- Maintain training register, identify training needs and provide training where required
- Provide advice and assistance to site personnel on environmental matters
- Assist site foreman in maintaining environmental records
- Assist in investigating and resolving complaints
- Undertake monitoring when required
- Ensure correct procedures are followed in the event of an environmental incident
- Dissemination of waste reduction and waste management procedures to all relevant personnel on site

1.4.4 Contractor's site foreman

The foreman will report on environmental activities to the site environmental representative and will be responsible for the following:

- Implement and maintain environmental controls on site

- Attend to any spills or environmental incident that may occur on site
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the site environmental representative/environmental manager
- Complete daily environmental log
- Maintain waste register and ensure correct waste management procedures are being implemented

1.5 Implementation

1.5.1 Construction Method Statements (CMS)

The EMP provides the overall project strategy for management of environmental issues, however, a Construction Method Statement (CMS) will address environmental management issues at a site level. The CMS provides an environmental manual for use by management and construction staff involved in the works. It addresses the environmental issues that are specific to an activity and/or site. CMS's should be produced for all major construction activities and/or major construction sites.

1.5.2 Work Instructions (WIs)

Environmental work instructions (WI's) are the most detailed form of environmental controls and provide "hands on" directions for on-site staff. They are related to specific environmental aspects on-site and provide clear and concise instruction to site personnel in dealing with situations such as:

- environmental incidents
- adverse weather conditions
- Complaints
- controls and commitments detailed in the EMP and CMS's
- a trigger point contained in the environmental inspection checklist or log
- general good site practice

1.6 Checking and corrective action

1.6.1 Monitoring and reporting

Monitoring is an integral part of the EMS as it establishes how the project is performing against objectives and targets set in the EMP. A schedule and procedures for monitoring and reporting should be developed at the outset in order to:

- identify any negative impacts from construction activities

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- assess the effectiveness of control measures
- demonstrate compliance with regulatory conditions and objectives and targets set in the EMP
- Identify if further controls/corrective action is required

Regular monitoring and reporting of dust, noise, vibration and water quality will be required by the regulatory authority. The frequency of this monitoring and reporting will largely be dictated by requirements of the planning obligation, section 106 agreements and the objectives and targets set in the EMP. In addition, monitoring may be required as a result of a complaint, a request by a statutory body or a trigger point in an inspection or checklist being exceeded. Monitoring and reporting should also reflect any requirements identified or commitments made in the CMS.

1.6.2 Environmental inspections, audits and registers

In addition to the routine monitoring detailed above a schedule of regular inspections, audits and reporting will be required by the contractor. These inspections etc will provide a record of site conditions and activities and provide a mechanism by which the contractor can establish the effectiveness of its EMP.

These checklists and reports should be kept at each site office and should be updated and used in the day to day operation of the site.

The client will also develop a schedule of inspections and auditing of the contractors EMP in order to ensure that established standards of environmental controls are being maintained by the contractor.

17.6.3 Compliance and non-conformance/corrective action report

If criteria within the EMP are not fulfilled and appropriate and corrective action is not taken a non-conformance may be raised by the environmental manager. Examples of circumstances where this may arise include:

Receipt of a complaint regarding pollution or other environmental impacts caused by the project

- Departure from approved or agreed procedures
- Non-conformance identified as a consequence of any self-assessment, formal audit or other environmental survey or inspection

Corrective action may include changes to work instructions (frequency of testing, test method etc.), alterations to the CMS, further staff training etc. Non conformances should be reviewed by the environmental manager and form part of construction meeting agendas.

In addition, non-conformance/corrective action report can be issued to the contractor by the client. It is the responsibility of the contractor to immediately initiate corrective actions and, once completed, provide details of the actions undertaken on the non-conformance/corrective action report and return it signed to the client's environmental manager within an agreed timeframe. If the non-conformance is considered to breach legislative requirements, the breach should be reported to the appropriate public authority.

1.7 Management review

Review triggers will be set in order to maintain the suitability and effectiveness of the EMP. A review would be carried out when triggers such as the following are met:

- As a minimum annually
- If required as a corrective and/or preventative action in response to an environmental incident or the outcomes of an environmental audit
- If required by a statutory body

1.8 Suggested Layout of the EMP

- Toolbox talks
- 15.0 Environmental audits
- 16.0 Non-conformance & corrective action
- 17.0 Environmental incidents and emergency response
- 18.0 Review of the Environmental Management Plan

- Review triggers
- Quality system improvements

1.9 Suggested file structure

- Environmental policy
- Environmental Management Plan
- Construction Method Statements
 - o Construction method or detailed phasing not known but a number of CMS's are likely to be required for each phase and activity
- Work Instructions
 - o Contaminated soil/land management
 - o Japanese knotweed management
 - o Discharging water from site
 - o Erosion and sedimentation control
 - o Dust management
 - o Noise management and monitoring
 - o Completing the environmental log
 - o Waste management on site
 - o Ecological mitigation and protection
 - o Environmental Incident management and reporting
 - o Non conformance/corrective action reporting and management
 - o Spill management
 - o Complaint handling procedure and sensitive receiver management

• Registers

- o Training register
- o Complaints register

• Checklists

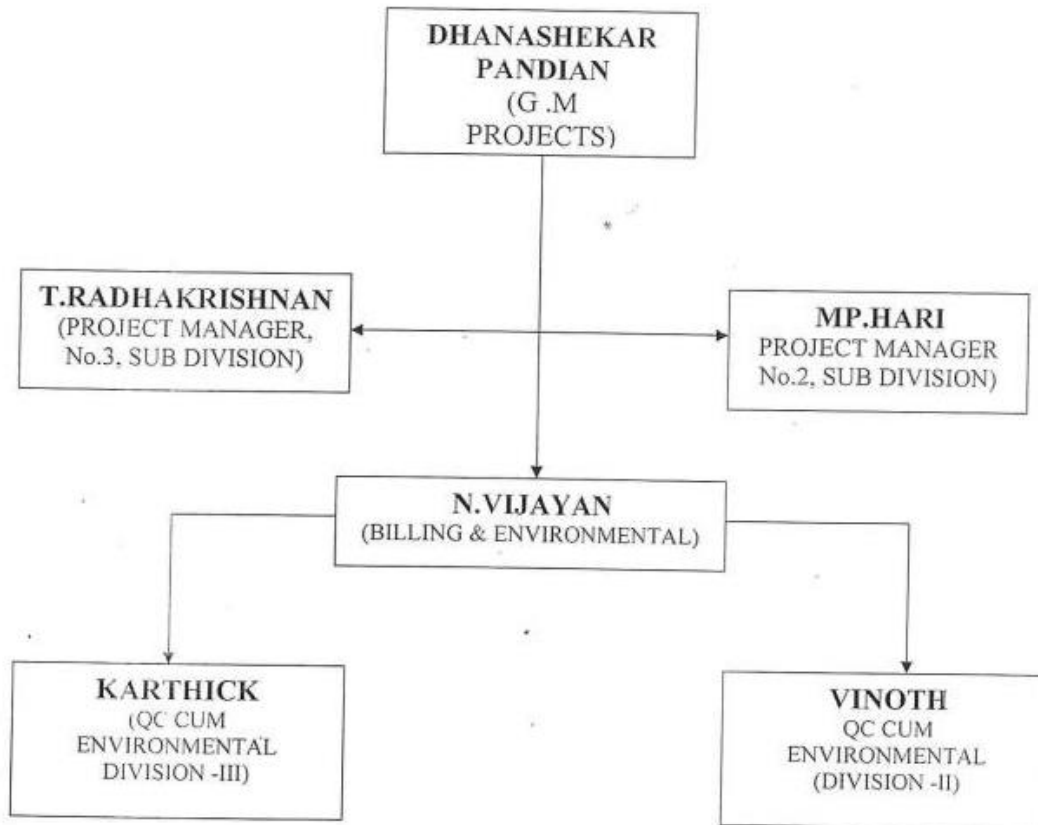
- o Weekly environmental checklist

- 1.0 Introduction
- 2.0 Project description
- 3.0 Environmental Policy
- 4.0 EMP preparation
 - Consultation
 - Project management structure
 - EMS
 - CMS
- 5.0 Environmental legislation, regulations and guidelines
 - Planning consent
 - Legislation and guidelines register
 - Any permits required
- 6.0 Environmental aspects and risk assessment
- 7.0 Objectives and targets
- 8.0 Environmental issues
 - List as identified by ES
- 9.0 Roles and responsibilities
 - Internal team responsibilities
 - Sub contractor responsibilities
- 10.0 Sub-contractor management
 - Selection
 - Inductions
 - Supervision
- 11.0 Communication
 - Internal
 - External
- 12.0 Reporting requirements
- 13.0 Complaint handling procedure
- 14.0 Environmental Training
 - Site induction training
 - Specialist environmental training

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ORGANIZATION CHART

(DIVISION – II & III, EMP, DEPARTMENT)



APPENDIX IV

Suggested List of environmental issues to be covered in the Contractor's EMP

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Mitigation Action to be implemented	Suggested Activities of Contractor for the Mitigation Action	Action List
Water Logging or Aquifer degradation due to project activities	Identify and manage quarries such that they cause minimum damage, if any to surface and groundwater systems and ensure that during quarrying there is minimum, if any, damage to aquifers and surface water systems.	Source material from approved quarries; Keep a record of all approvals; Undertake periodic inspection of quarry sites for its compliance; Keep record of all incidents at the quarry site.	The CEMP does not specify the actions to be taken by the Contractor. Contractor should prepare a modified CEMP and re-submit. Contractor should submit the approvals to KNNL. Contractor should submit inspection report every month.
Cutting of Trees	Requires Contractor to consult with the Forest Department to select the appropriate species and carry out the necessary plantation activities.	Conduct survey of trees along the construction path including pathway used for equipment transport; Consult local community on trees of importance to the community; Select open land for planting of trees; Seek approval of the local community for use of identified land for tree planting; Seek Forest Department approval for the species to be utilised for tree planting.	The CEMP does not specify the actions to be taken by the Contractor. Contractor should prepare a modified CEMP and re-submit; An inventory of trees to be cut should be provided; All approvals should be provided upon-demand.
Reduction in habitat for local flora and fauna	Scheduling of work to be done to minimise human-animal conflict by identifying possible animal corridors and taking up appropriate mitigation actions.	Map the animal corridor areas near the construction sites; Discuss with Forest Department if any animal corridor is identified and develop a plan of action accordingly	Share details of the mitigation plan implementation.
Damage to Infrastructure	Implementation of a plan of action to ensure that all infrastructure are	Record baseline information on the condition of all land and other infrastructure used during construction;	Share the baseline information and action taken information at the end of the construction

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Mitigation Action to be implemented	Suggested Activities of Contractor for the Mitigation Action	Action List
	maintained in their original state.	Take corrective measures at the end of the construction period at each of the construction related sites.	activity at each of the construction sites.
Workers / Labour Camps and facilities	Implementation of a plan of action for ensuring good living conditions for the workers / labourers working at the project site.	Record the facilities that have been provided to the workers / labourers at each of the construction sites.	Share the information on the facilities provided to the workers / labourers at each of the construction sites.
Conflict with labour camp for resources	Implementation of a Stakeholder Consultation Plan for avoiding conflict between migrant labour and local populations.	Conduct awareness workshops for migrant labourers; Resolve any incidences as a matter of priority through appropriate consultations; Record the information on any incidences.	Share the information on conflict redressal mechanism on a monthly basis.
Chance finding of archaeological sites	Implementation of a plan of action for dealing with situation arising out of chance finding of archaeological sites.	Contractor should intimate the District Collectorate on any chance finding of archeological sites.	Shall update and share information on a monthly basis for all construction sites.
Pollution from Construction activities	Implementation of a plan of action to reduce pollution from construction activities.	Air pollution from movement of trucks from batching plant should be dealt with by sprinkling water on roads leading to the main road; Contractor should obtain Road Worthiness Certificate and Non-Polluting Vehicle Certificate from relevant agencies of the government for the vehicles used during the project period; Contractor should limit air and noise pollution from vehicle and equipment by carrying out regular maintenance; Contractor should provide ear plugs at construction sites where noise is expected to be higher than normal;	Updates on action taken by the Contractor shall be provided on a monthly basis;

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Mitigation Action to be implemented	Suggested Activities of Contractor for the Mitigation Action	Action List
Accidents and Health concerns of local population	Implementation of a plan of action to eliminate accidents and address health concerns of local population arising from construction activities including migrant labour.	<p>Contractor should install appropriate sign boards in the local language to warn the local residents of the truck and vehicle movements in the populated areas;</p> <p>Contractor should hold sensitization workshops for the local residents on the temporary utilisation of the roads during the construction period and spell out the accident prevention mechanism that has been taken;</p> <p>Regular health checkups of all workers and labourers should be carried out;</p>	Updates on action taken by the Contractor shall be provided on a monthly basis;
Compaction of soil / soil erosion for access to various sites and quarries such as metal quarries for aggregate, murrum quarries and sand mining areas	Rehabilitation Plan for restoring the construction / quarry sites after work completion should be developed and adhered to.	<p>Record baseline condition of the construction / quarry site;</p> <p>Construction / Quarry Site Restoration Plan should be developed for each site and adhered to prior to closure.</p>	<p>Contractor shall submit separate Construction / Quarry Site Restoration Plans for all locations including Batching Plant, Construction and Labour Campsites;</p> <p>Information on the implementation of the Restoration Plans shall be shared on a regular basis;</p>
Impact on local fisheries and fish spawning and aquatic fauna	Construction activity to be scheduled such that the impact on local fisheries and fish spawning is minimized.	<p>Contractor should identify sites that are utilised for fisheries and fish spawning.</p> <p>Action Plan should be prepared and implemented for such sites in discussion with the Fisheries Department.</p>	Updates on action taken by the Contractor shall be provided;
Disturbance to local population	Construction activity to be scheduled such that there is minimum disturbance to local population.	<p>Contractor should hold sensitization workshops for the local residents on construction activities near the habitations;</p> <p>Contractor should schedule the construction activity in consultation with local population;</p>	Updates on action taken by the Contractor shall be provided;

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Mitigation Action to be implemented	Suggested Activities of Contractor for the Mitigation Action	Action List
Reduced access to sites for local population, construction sites or material procurement sites.	Construction activity and movement of vehicles to be scheduled such that there is minimum disturbance to the movement of local population.	Contractor should hold sensitization workshops for the local residents on construction activities near the habitations; Contractor should schedule construction activity in consultation with local population;	Updates on action taken by the Contractor shall be provided;
Sand Mining and possible change in river course and river scouring	Contractor to ensure that excess sand mining is not done and should rehabilitate sand mining area after work is completed.	Contractor should identify the sand mining area and provide details of the volume to be mined and share it with appropriate agency; Baseline condition of the sand mining area should be recorded; Contractor should obtain the necessary approvals, if required, prior to starting sand mining at the identified location; Contractor should carryout the necessary rehabilitation activities after the sand mining is completed; Contractor should generate the closure report for each sand mining site.	Regular updates on action taken by the Contractor shall be provided;
Water logging from poor site planning and management	Contractor to implement proper site planning and management to prevent water logging.	Baseline information on drainage management at the construction areas should be recorded by the Contractor for each of the construction sites; Contractor should identify and carryout the necessary activities to prevent water logging; Contractor should generate the closure report for each construction site.	Regular updates on action taken by the Contractor shall be provided;
Erosion due to sand and murrum mining and material procurement methods	Contractor to implement a plan of action to prevent erosion.	Baseline condition of the sand mining and murrum mining areas should be recorded; Contractor should identify and carryout the necessary rehabilitation activities after the	Regular updates on action taken by the Contractor shall be provided;

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Mitigation Action to be implemented	Suggested Activities of Contractor for the Mitigation Action	Action List
		<p>mining is completed to prevent erosion;</p> <p>Contractor should generate the closure report for each sand and murrum mining site.</p>	
Disturbance to wild life species due to construction and material procurement activities.	Contractor to schedule activities and prevent disturbance to wild life activities	<p>Contractor should make an assessment of the wild life activities near the construction sites;</p> <p>Contractor should schedule the construction activities such that the activities do not disturb wildlife activities;</p>	Regular updates on action taken by the Contractor shall be provided;
Occupational safety and health hazards	Contractor to take up adequate measure to ensure occupational safety and prevent health hazards.	<p>Contractor should prepare an Occupational Safety and Health Plan to address all the health and safety issues faced by the labourers and workers working on the project;</p> <p>Contractor should hold an awareness workshop for the labourers and workers on the occupational safety and health issues;</p> <p>Contractor should provide the necessary materials including first-aid kits to tackle all occupational health and safety issues faced by the labourers / workers during the construction activities;</p> <p>Contractor should keep a record of all incidences pertaining to occupational health and safety;</p>	Regular updates on action taken by the Contractor shall be provided;

APPENDIX V

TOR OF THE PSC ENVIRONMENTAL SPECIALIST

The Environment Specialist will have a first degree in environmental science or related subjects with a Master's degree in environmental sciences or a similar relevant subject. The specialist will have at least 10 years' experience in environmental assessment in relation to irrigation/water resources projects, preferably in South Asia, and demonstrable experience in preparing relevant documentation for similar development projects and familiarity with relevant ADB procedures:

- (i) Support monitoring of environmental impacts of Tranche 1 Projects;
- (ii) Follow the Environmental Assessment and Review Framework (EARF) prepared during the PPTA, the environmental laws and regulations of SGOK and the Government, and ADB's safeguard policy statement (2009), and assist the KNNL to arrange and organize collected information and to undertake initial environmental examination (IEE) or Environmental Impact Assessment (EIA), as necessary for Tranche 2 sub-projects;
- (iii) Assist the KNNL in identifying environmental management and monitoring actions to mitigate negative impacts and identify their corresponding costs, for inclusion in the IEE / EIA for Tranche 2 sub-projects;
- (iv) Assist the KNNL in monitoring the implementation of environmental management and monitoring plans for Tranche 2 subprojects;

APPENDIX VI

Assessment of the Contractor's Performance in EMP Implementation – Upto March 2017

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
<p>Water Logging or Aquifer degradation due to project activities</p>	<p>No water logging incidences has been logged by the Contractor for any of the construction sites. During discussions with local residents, no water logging incident was reported, as well.</p> <p>No aquifer degradation event has been logged by the Contractor. Also, during discussions with nearby residents, no aquifer degradation were reported.</p> <p>Sanitation facilities at both the campsites and construction sites are adequate and have been put to use.</p> <p>During this period (Oct. 2016 – Mar. 2017), at a couple of construction site locations, oil-contaminated soil was encountered. The volume of such contaminated soil was to the extent of 15m³ in each of the instances. The Contractor removed the contaminated soil and disposed off the same in authorised locations. The contaminated soil was replaced with good soil from nearby authorised burrow areas.</p>	<p>The Contractor has been instructed to keep a log book on the water logging incidences including photographs of such events;</p> <p>The Contractor has been instructed to ensure that the labourers / workers use these facilities and the facilities maintained in an exemplary manner.</p> <p>The Contractor has been instructed to analyse samples of groundwater collected from the borewells near the campsites and construction sites and record the results.</p> <p>The Contractor has been instructed to continue maintaining weekly-wise records of all water-logging and site information of all campsites and construction sites.</p> <p>The Contractor has been instructed to maintain the O&M Record of the sanitation facilities provided at both campsites and construction sites.</p>
<p>Cutting of Trees</p>	<p>The Contractor is required to conduct survey of trees along the construction path including pathway used for equipment transport.</p> <p>Requires Contractor to consult with the Forest Department to select the appropriate species while carrying out any necessary plantation activities.</p> <p>The Contractor has conducted a survey of the trees and has counted over 234 trees to be present in the construction areas. Majority of these trees are in the areas</p>	<p>The Contractor has been instructed to henceforth consult with the local community on trees of importance to the community and take decision on tree cutting accordingly. A record of such decision making should be maintained.</p>

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
	<p>encroached and are required to be removed for carrying out the construction activities.</p> <p>At Holehonnur construction site, one of the trees that was utilised for temple rituals was cut. Hence, the contractor was instructed to replant the same species at a location that is acceptable to the local population. Since then, the Contractor has replanted the Bilva tree at Holehonnur.</p> <p>During this period (Oct. 2016 – Mar. 2017), while carrying out work on the Service Road of the Canal Sections near Kanchikatta, the construction truck fell off the road because of slippery ground condition during which time about 3 arecanuts trees was destroyed. The Contractor has paid compensation to the farmer for the trees destroyed despite the fact that the trees were on encroached property.</p> <p>Additionally, during this period (Oct. 2016 – Mar. 2017), in an instance involving CAD works conducted by the Kagekodmagge, an encroached area with about 60 arecanut trees was encountered along the distribution channels. During this time, the Consultant's SST Team worked with the WUCS and the Community and arrived at a solution to save the entire set of 60 trees by re-aligning the distribution channels.</p>	
Reduction in habitat for local flora and fauna	<p>The Contractor is required to schedule work to be done so as to minimise human-animal conflict by identifying possible animal corridors and taking up appropriate mitigation actions.</p> <p>Upon receiving instructions from the PSC, the Contractor has worked with the Forest Department to determine the presence of any animal corridor in the construction areas. No animal corridor exists in the construction area.</p>	The Contractor has been instructed to record the decision and share it with KNNL.
Damage to Infrastructure	<p>The Contractor is required to implement a plan of action to ensure that all infrastructure are maintained in their original state.</p> <p>Upon receiving instructions from the PSC, the Contractor has been keeping a photo-record of the baseline conditions of the site</p>	The Contractor has been instructed to continue keeping record baseline information and closure information on the condition of all land and other infrastructure at each of the construction related sites. A

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
	<p>and supplementing it with photographs taken after closure.</p> <p>Minor repairs have been carried out by the Contractor to cover certain structures near the construction sites. These minor repairs were not part of the original scope of work of the Contractor.</p> <p>No infrastructure damage has been noticed at the closed construction sites.</p> <p>During this quarter (Oct. 2016 – Mar. 2017), the Contractor has requested the Electricity Supply Company to shift the electric poles from the encroached portion of the Service Road in order to prevent any untoward incidents during construction. The ESCOM has not yet carried out of the work.</p>	<p>record of such decision making should be maintained.</p> <p>The Contractor has been instructed to continue involving other agencies for prevention of damage to community infrastructure.</p>
Workers / Labour Camps and facilities	<p>The Contractor is required to implement a plan of action for ensuring good living conditions for the workers / labourers working at the project site.</p> <p>The Contractor has provided adequate water and sanitation facilities at the Workers / Labour Camps. Additionally, the Contractor has provided fire-wood for cooking purposes to the workers' families so as to avoid the cutting of the trees near to the labourers camps. At the Workers' Camp, LPG cylinders are provided for cooking purposes.</p> <p>In an instance, during this period (Oct. 2016 – Mar. 2017), a new set of labour force, when recruited, had started to utilise firewood from the local forests. The Contractor has instructed the labour force not to cut trees in the forest and provided them with alternative firewood for cooking.</p>	<p>The Contractor has been instructed to introduce segregation of wastes especially dry and kitchen wastes at the two campsites.</p> <p>The Contractor has been instructed to compost the kitchen wastes at the two campsites. The Contractor has also been instructed to recycle the dry wastes.</p> <p>The Contractor has been instructed to keep a record of all the facilities provided.</p>
Conflict with labour camp for resources	<p>The Contractor is required to take all possible measures to avoid conflict between migrant labour and local populations.</p> <p>It is a positive sign that the Contractor has distributed fire wood to the labourers for cooking purposes which would help prevent conflict with the local population for resources.</p>	<p>The Contractor has been instructed to conduct an awareness workshop for the migrant labourers.</p> <p>The Contractor has been instructed to keep a record of all initiatives and incidences of conflict between migrant labour and local population and use all</p>

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
	No conflict for available resources has been reported near the labour / workers' camps.	resources to resolve such conflicts. The Contractor has been instructed to continue taking proactive measures to prevent any conflict.
Chance finding of archaeological sites	The Contractor is required to implement a plan of action for dealing with situation arising out of chance finding of archaeological sites. No archaeological sites have been found in the construction area.	The Contractor has been instructed to continue keep a record of archeological site findings and interact with the District Collectorate on the action to be taken for any any such findings.
Pollution from Construction activities	The Contractor is required to implement a plan of action to reduce pollution from construction activities. As of now, the Contractor has provided adequate sanitation facilities at the Labour / Workers Campsites. No pollution has been reported from the construction activities at / near the construction sites. The Contractor is watering the campsites as well as the village roads to prevent dust in the surroundings.	The Contractor has been instructed to keep a record on of the quality of air, water and land at the construction sites for baseline, during construction and post-construction periods. The Contractor has been instructed to periodically sample and analyse the groundwater to ensure that the groundwater quality is not affected near the Workers' / Labourers' Campsites due to use of soakpits / septic tanks for sewage disposal. The Contractor has been instructed to introduce segregation of wastes especially dry and kitchen wastes at the two campsites. The Contractor has been instructed to compost the kitchen wastes at the two campsites. The Contractor has been instructed to recycle the dry wastes. The Contractor has been instructed to continue maintaining record of the O&M activities of all pollution control equipments / processes.

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
Accidents and Health concerns of local population	<p>The Contractor is required to implement a plan of action to eliminate accidents and address health concerns of local population arising from construction activities including migrant labour.</p> <p>The Contractor has installed sign boards warning the local residents about the movement of trucks along the village roads during the transport of concrete-mix to the construction sites.</p> <p>An accident involving a local resident, but not attributable to either the construction activities / Contractor occurred in one of the construction sites. The Contractor, in good faith, took care of the medical expenses amounting to Rs. 3.25 Lakhs.</p> <p>No other accidents or health related concerns attributable to the project have been reported in the construction areas or among the construction workers / labourers.</p> <p>Monthly health checkups of all workers and labourers and their family members have been carried out;</p>	<p>The Contractor has been advised to hold regular sensitization workshops for prevention of construction-related accidents.</p> <p>The Contractor has been instructed to continue keeping a record of all initiatives taken to prevent accidents and health concerns of local population.</p>
Compaction of soil / soil erosion for access to various sites and quarries such as metal quarries for aggregate, murrum quarries and sand mining areas	<p>The Contractor is required to work with quarry owners in restoring the construction / quarry sites after work completion.</p> <p>As of now, the Contractor is procuring construction materials only from legally approved quarries.</p>	<p>The Contractor has been instructed to work with the Quarry owners to develop and implement a Construction / Quarry Site Restoration Plan and keep a record of the initiatives taken.</p>
Impact on local fisheries and fish spawning and aquatic fauna	<p>The Contractor is required to schedule construction activity such that the impact on local fisheries and fish spawning is minimized.</p> <p>There are no reported impacts of the construction activities on local fisheries and fish spawning.</p>	<p>The Contractor has been instructed to continue being proactive in identifying construction areas utilised for local fisheries activities and take preventive actions in discussions with Fisheries Department, if required.</p>
Disturbance to local population	<p>Construction activity to be scheduled such that there is minimum disturbance to local population.</p> <p>There are no reported occurrence of disturbance to local population caused by the construction schedule.</p>	<p>The Contractor has been instructed to continue to be sensitive to the needs of the local population and schedule construction activities so as to minimize any disturbance.</p>

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
	The Contractor is holding local consultations at closure stages to ensure that the local community is satisfied with the restoration of the construction site to original condition after completion of construction.	The Contractor has been instructed to keep a record of any changes that have been incorporated in the construction schedule and / or construction activities to address local population requirements.
Reduced access to sites for local population, construction sites or material procurement sites.	<p>The Contractor is required to schedule construction activity and movement of vehicles such that there is minimum disturbance to the movement of local population.</p> <p>Local population have not lodged any complaint on reduced access to their lands / public places because of the construction activities.</p> <p>Local population have appreciated the Contractor's effort in installing sign boards warning about the movement of material-trucks within the village area.</p>	<p>The Contractor has been instructed to hold sensitization workshops for the local residents on construction activities near the habitations and instruct on the health and safety issues surrounding such activities.</p> <p>The Contractor has been instructed to continue to be sensitive to the local population access needs.</p> <p>The Contractor has been instructed to maintain a record of initiatives taken to maintain access.</p>
Sand Mining and possible change in river course and river scouring	<p>Contractor to ensure that excess sand mining is not done and should rehabilitate sand mining area after work is completed.</p> <p>Presently, no river sand is being used by the Contractor for construction activities. In fact, the Contractor is procuring manufactured-sand (M-Sand) from sub-contractors.</p>	The Contractor should keep a record on Sand Procurement including source and the environmental management plan followed by the vendors.
Water logging from poor site planning and management	<p>Contractor to implement proper site planning and management to prevent water logging.</p> <p>No water logging incidents have been reported in any of the construction sites, thus far.</p>	<p>The Contractor has been instructed to continue proactive measures to prevent water logging at construction sites.</p> <p>The Contractor is also instructed to keep a record of initiatives taken to prevent water-logging.</p>
Erosion due to sand and murrum mining and material procurement methods	<p>Contractor to implement a plan of action to prevent erosion.</p> <p>Material procurement is through sub-contractors hired by the Contractor and information on erosion is being sought from the Sub-Contractor.</p>	The Contractor has been instructed to keep records of the Erosion Prevention Plan implemented by the sub-contractors at the material sourcing areas.

Environmental Issue identified in the PPTA for which the Contractor is responsible for	Observation Status	Remarks
Disturbance to wild life species due to construction and material procurement activities.	<p>Contractor to schedule activities and prevent disturbance to wild life activities</p> <p>No disturbance to wild life has been reported because of either construction activities or material procurement.</p>	The Contractor has been instructed to keep records of disturbance to wildlife reported during either construction activities or material procurement.
Occupational safety and health hazards	<p>Contractor to take up adequate measure to ensure occupational safety and prevent health hazards.</p> <p>One snake-bite incident was reported in one of the construction sites in Dec. 2016. The Contractor incurred all the necessary medical expenses to cure the victim. The victim has since then reported back to work.</p> <p>No other incidences of workers' / labourers' health and safety has been reported this quarter.</p>	<p>The Contractor has been instructed to be pro-active on occupational safety and health hazards.</p> <p>The Contractor has also been instructed to keep a record on such incidences.</p>

APPENDIX VII

Assessment of the Role of Other Institutions in EMP Implementation during the period upto March 2017

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
Reduced environmental flows due to increased efficiency	Overall assessment of appropriate water needs for each sector, including environmental flows.	AC-IWRM and River Basin Plans	Action taken shall be updated upon receipt of information from the agencies.
Water Logging or Aquifer degradation due to project activities	Development of appropriate drainage structures and management measures, on-farm land management; Work with farmers to identify appropriate cropping patterns and agri-chemical usage given existing soils and drainage conditions Identify and manage quarries such that they cause minimum damage, if any to surface and groundwater systems and ensure that during quarrying there is minimum, if any, damage to aquifers and surface water systems.	PMU Command Area Development (CAD) and Institutions Cells, WUCS and Agricultural Extension Sub-Project	Action taken shall be updated upon receipt of information from the agencies.
Water quality degradation due to existing agricultural activities – agrichemicals and land management practices	Education to farmers in improved agricultural practices and use of agri-chemicals, on-farm land management practices.	PMU CAD and Institutions Cells, WUCS and Agricultural Extension Sub-Project	The agencies are expected to take up this task once all the WUCS are formed and construction gets completed.
Increased soil-toxicity, reduction in soil quality, soil exhaustion and erosion	Education to farmers in improved agricultural practices and use of agri-chemicals, on-farm land management practices.	PMU CAD and Institutions Cells, WUCS and Agricultural Extension Sub-Project	The agencies are expected to take up this task once all the WUCS are formed and construction gets completed.
Lowering groundwater table	Identify appropriate groundwater management and conjunctive use plans and local level regulation systems based upon local aquifer needs.	AC-IWRM's IWRM Plans, PMU CAD and Institutions cells	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
Cutting of Trees	<p>Ensure design reduces need to cut trees;</p> <p>For all trees cut / removed, plantation should be in the ratio of 3 planted for every one cut. All plantation activities should consist of appropriate species for the area to be planted, in consultation with the Forest Department and also after understanding the local ecological needs. Include in project budget. Need to include in the construction contractor's contract.</p> <p>Ensure required permission is taken from Tree Officer as identified in the Karnataka Preservation of Trees Act, 1976 prior to any tree cutting activity.</p>	PMU CAD and Institutions Cells	Action taken shall be updated upon receipt of information from the agencies.
Reduction in habitat for local flora and fauna	<p>Ensure all plantation activities are based upon the local fauna and flora needs, with no invasive species planted;</p> <p>Identify possible animal corridors and identify possible actions to reduce conflict - such as scheduling work in any corridors to minimise conflict;</p> <p>Ensure alien species or those inappropriate to the area are not planted in any animal corridor or fly path area;</p> <p>Identify appropriate local species for any firewood plantations;</p> <p>All construction activities should be included in the construction contractor's clauses.</p>	PMU CAD and Institutions Cells	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
Human-Animal Conflict	<p>Where possible identify appropriate cropping pattern, considering possible animal raid issues. Discuss with Forest Department;</p> <p>Avoid any activity in animal corridors during migratory season and do not create any permanent structure to obstruct it.</p>	PMU CAD and Institutions Cells	Action taken shall be updated upon receipt of information from the agencies.
Reduced fodder and grazing lands	<p>Identify areas which are specifically for grazing in the area and through community management ensure that they are not encroached upon or overgrazed;</p> <p>Identify appropriate agencies, such as the Animal Husbandry Department to help with improving fodder availability and reduction in open grazing;</p> <p>Implementation of locally identified issues through guidance from PMU</p>	PMU CAD and Institutions Cells, and AC-IWRM's IWRM Plans	Action taken shall be updated upon receipt of information from the agencies.
Chance finding of an archaeologically or culturally important site	<p>The EMP should include in the event such sites are encountered, all work that may be underway or planned in the area should be stopped and discussed with the District Commissioner before further action.</p> <p>Ensure that the construction company and the supervising consultants have an understanding of the archaeological concerns of the area.</p> <p>Ensure that any important archaeological area is well identified and demarcated and that required actions are specified in a detailed management and mitigation plan so that no damage takes place to it.</p>	PMU Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
Reduced aesthetics due to quarries on river bed, hills etc.	<p>Rehabilitation of all sites must be undertaken once work is completed and plans developed well in advance of construction activities. Include rehabilitation requirements in the construction company contract to ensure it is taken up and appropriate budget should be made for the activity.</p> <p>Avoid any quarrying work in an aesthetically important /significant place.</p> <p>During design phase, once sites are identified, ensure budget to rehabilitate sites are allocated and and remediation actions included in EMP.</p> <p>All construction related activities should be included in the construction contractor's contract as clauses, including material procurement.</p>	PMU Irrigation and Institutions Cells.	Action taken shall be updated upon receipt of information from the agencies.
Loss of local agri-biodiversity	<p>Identify methods of preserving and cultivating local agricultural species and cultivators;</p> <p>Work towards breed improvement of local agricultural species and possible methods to improve income from the sale of produce of local agri-biodiversity</p>		Action taken shall be updated upon receipt of information from the agencies.
Conflict with local fisheries	<p>Do not undertake any construction/quarrying activities in areas where local fish populations are important. In case unavoidable, identify methods to reduce impact after discussion with local population and also consider ways to compensate for loss;</p> <p>Consider and include fish passages at Anicuts.</p>	PMU Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
Reduced access to water for domestic, livestock and other purposes from canal system due to design changes and increased water use efficiencies	Identify water needs for different users and in consultation with them develop appropriate design changes to ensure access to identified groups at required places.	PMU Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Disruption of traffic routes due to siting of infrastructure	Identify any landing and other sites along the planned infrastructure site. Where possible consider design changes to ensure there are no problems faced by the local Population; Where not possible in consultation with the local population create alternate facilities.	PMU CAD and Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Increase in agricultural waste such as agrichemical waste	Undertake farm management education for farmers to ensure that they know how to dispose agrichemical waste in most appropriate way; Explore with KVK's, Agriculture Department, local agri-chemical shops and agri-chemical companies on the possibilities of a buy-back system for agrichemical containers etc.	PMU CAD and Institutions Cell, WUCS and Agricultural Extension Sub-Project	The agencies are expected to take up this task once all the WUCS are formed and construction gets completed.
Increased vector habitats and diseases	Ensure adequate drainage needs are identified, designed and their maintenance is also identified; If required, develop extra drainage plans for various structures to ensure there is no waterlogging	PMU CAD and Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Reduction in food supplements – fish and wild berries	Identify any use of lands where structure is lanned, or fishing areas and consider how best to take into account people's needs; Through an IWRM approach identify various needs of lands not presently occupied by	PMU Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
	agriculture and ensure that these uses are accounted for any land use and management plan developed for the area.		
Increase in agri-industrial wastes from local factories	Review waste management processes and prepare better plans as required	PMU Institutions Cell and State Pollution Control Board.	Action taken shall be updated upon receipt of information from the agencies.
PROJECT OPERATION			
Increased agricultural waste in water and water bodies	Ensure through farmer's education that waste is not disposed in water bodies and appropriate waste disposal systems are found and used.	PSC Environmental Specialist with WUCS Service Support Teams	This activity shall be taken up after all the WUCS are formed and prior to commencement of the operational phase of the project.
Increased agrichemicals in surface and ground water systems, and reduced quality of return flows	Farmers education on proper use and management of agrichemicals, including their waste. Ensuring a farmer-friendly method for disposal of agrichemical waste, as identified during project design.	PSC Environmental Specialist with WUCS Service Support Teams	This activity shall be taken up after all the WUCS are formed and prior to commencement of the operational phase of the project.
Waterlogging and reduced drainage	Identify appropriate cleaning and maintenance of drainage system, including disposal of waste removed. Improved agriculture practices– understanding plant needs and use of irrigation water as required through improved understanding of the system; Identify appropriate systems for the management of drains and disposal of silt. Ensure there is a budget for the management of drains and the budget is spent on it	PMU CAD and Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Soil degradation due to poor on-farm management, intensive agriculture, soil	Identify appropriate soil management and soil testing systems and educate farmers on it.	PMU CAD and Institutions Cell	This activity shall be taken up after all the WUCS are formed and prior to commencement

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
exhaustion and soil toxicity due to chemical usage and lack of knowledge among farmers.	Ensure that farmers remember through repeated information sharing on good agriculture and soil management practices.		of the operational phase of the project.
Change and degradation of wetlands due to waste dumping and expansion of agricultural lands	<p>Identify important wetlands and identify land use and condition.</p> <p>Through the IWRM activities identify appropriate land management and conservation methods, and work with farmers to educate and ensure that wetlands are not degraded.</p> <p>Work with farmers to identify appropriate land management and waste management systems at the village level.</p>	PMU Cells, SST and PSC Environmental Specialist	This activity shall be taken up after all the WUCS are formed and prior to commencement of the operational phase of the project.
Reduced and degradation of habitats for species – both aquatic and terrestrial species	<p>Work through a community system to identify wetlands, other habitats and local environmental assets.</p> <p>Work with local community to ensure that cultivation is not extended into areas environmental assets.</p> <p>Educate community on management of soil and agri-chemical usage.</p> <p>Demarcate all areas through an IWRM plan for conservation and limitation of areas for agriculture.</p>	PMU Institutions Cell and AC-IWRM's IWRM Plans	Action taken shall be updated upon receipt of information from the agencies.
Increased aquatic weeds	<p>Ensure appropriate drainage management to keep the canals and drains silt free and not allowing the disposal of any waste.</p> <p>Work with farmers through farmer's education system to ensure appropriate application of agri-chemicals, including fertilizers.</p>	PMU Irrigation and Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.

Environmental Issue identified in the PPTA for which the Institutions are responsible for	Mitigation Action to be implemented	Project Responsible Authorities	Action List
	Educate farmers on proper soil management and testing.		
O&M waste – spoils from drainage system and canals	Identify appropriate waste management system for drain cleaning. Weeds can be used, in consultation with farmers, for manure. Therefore, if farmers are interested a system for their use and disposal on farmlands at the time that drains are cleaned should be undertaken.	PMU Irrigation and Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Increased toxicity in environment and for people with more agrichemical packages being reused	Farmer education on appropriate management of agri-chemical packaging. Where possible consider a buy-back system for agri-chemical packages by the agri-chemical companies.	PMU Institutions Cell	Action taken shall be updated upon receipt of information from the agencies.
Non-point source pollution of waterways	Work with and educate farmers on the best management of agri-chemicals. Consider options for improving quality of NPS runoff.	PMU Institutions and CAD Cell, AC-IWRM Studies	Action taken shall be updated upon receipt of information from the agencies.
Multi-objective use of tanks and off line storages	Consult with users, study existing and planned uses and consider options for best management of the tank areas recognising their multiple uses	PMU Institutions Cell, AC-IWRM's IWRM Plans	Action taken shall be updated upon receipt of information from the agencies.
Increase waste from fields due to micro-irrigation system	Educate farmers on best management of systems to be used, where to get good quality material that does not break down and spoil fast, its maintenance and proper disposal of waste	PMU Irrigation and Institutions Cells WUCS and agricultural extension sub-project	This activity shall be taken up after all the WUCS are formed and prior to commencement of the operational phase of the project.

APPENDIX VIII

Implementation of Environmental Monitoring Plan

Parameter	Monitoring Frequency	Actions	Responsible Authority	Actions this Period
PROJECT CONSTRUCTION				
Noise	Baseline and Monthly during construction	Establish pre-construction baseline; Identify habitations close to construction site or wild life area, if any.	Construction Contractor	No action taken. The Contractor has been instructed to take up this activity at all construction and camp sites on a regular basis.
Site for Quarries and borrow pits	Baseline and Final Check after construction is complete	Photographic baseline for restoration of site and final check after construction and restoration is complete.	Construction Contractor	The Contractor has been instructed to get the information from the Quarry owners and keep a record of the initiatives taken by the quarry owners to ensure restoration of the quarry and borrow pit sites.
Removal of vegetative cover and trees	Baseline and Final Check prior to final payment	Vegetative and Tree Survey to be conducted; Replantation Plan to be developed and implemented .	Construction Contractor in consultation with PMU and Forest Department.	The Contractor has completed the baseline survey of the trees that needs to be removed. The Contractor has been removing trees only in the encroached areas after due process of discussing with the local community and farmers on the same.
Waste Management at sites	Random at sites but report compiled monthly at sites	Develop and implement waste management plan at sites	Construction Contractor	Liquid waste management has been put in place at both the labourers' and workers' campsites. The Contractor has been instructed to ensure effective maintenance of the same so that all facilities are in usable condition during the project / construction period.

Parameter	Monitoring Frequency	Actions	Responsible Authority	Actions this Period
Site Management	Monthly for duration of work	To ensure all required facilities are available at campsites and construction sites including those related to health and safety of labourers, workers and local community who are impacted by construction activity	Construction Contractor	The Contractor has provided for water and sanitation facilities at the labourers' and workers' campsites. Also, the labourers are provided with firewood for cooking purposes so as to avoid conflict with local community on the use of local firewood resources.
Site Restoration	Baseline and Final Check prior to final payment	Develop and implement site restoration plan;	Construction Contractor	The information shall be updated upon completion of work at each of the construction sites. A register has been maintained to record the restoration activities and approval of the local community is taken prior to moving the workers to another site location.
PROJECT OPERATION				
IPMN Implementation	Bi-Annual	Review progress of knowledge and use of IPMN by farmers and access to required facilities.	PMU CAD and Institutional Cells, WUCS and Extension Workers.	This activity shall be taken up after the construction is completed and operation of the modernized system commences
Water Quality	Annually	Baseline and later annually for a 5-year period.	PMU CAD and Institutional Cells, WUCS and Extension Workers.	This activity shall be taken up after the construction is completed and operation of the modernized system commences

APPENDIX IX

Assessment of Social Safeguard Implementation by the Contractor

Social Safeguard issues identified in the PPTA for which the Contractor is responsible for	Observation and Status	Remarks
Resettlement	The system rehabilitation and modernization is unlikely to involve any need for land acquisition or resettlement and rehabilitation. In the rare event that this is needed, the Contractor has been instructed to inform KNNL and decision taken in consultation with the authorities.	The Contractor should keep track of the incidences of any resettlement issues.
Indigenous Population	The system rehabilitation and modernization is unlikely to negatively impact the indigenous population. In the rare event that an impact is noticed, the Contractor has been instructed to inform KNNL and decision taken in consultation with the authorities.	The Contractor should keep track of the incidences of any indigenous peoples issues.
Health and HIV/AIDS	<p>The Contractor has been instructed to periodically conduct awareness workshops on HIV/AIDS using the services of a Local Medical Officer who shall explain the risk of sexually transmitted diseases on periodic basis.</p> <p>The Contractor has been instructed to conduct regular health checkup of its labourers and workers to ensure their general health condition.</p> <p>The Contractor has been instructed to periodically conduct awareness workshops on Human Trafficking issues so as to ensure safety of the labourers and workers families.</p>	<p>The Contractor should maintain records of all awareness workshops and health clinics that has been conducted for the labourers' and workers.</p> <p>Such reports needs to be maintained for periodical checking</p>

APPENDIX X

Assessment of Social Safeguard Implementation by Other Agencies

Social Safeguard issues identified in the PPTA	Observation and Status	Remarks
Resettlement	The system rehabilitation and modernization is unlikely to involve any need for land acquisition or resettlement and rehabilitation. However, KNNL has to ensure that the R&R issues, if any are addressed prior to handing over the site to the Contractor.	KNNL should keep track of the incidences of any resettlement issues.
Indigenous Population	The system rehabilitation and modernization is unlikely to negatively impact the indigenous population. However, KNNL, PMU and CADA has to ensure that during construction and operation of the system, the interests of the indigenous population is protected.	The Contractor should keep track of the incidences of any indigenous peoples issues. CADA should ensure that the WUCS safeguard the interests of all indigenous population during the CAD works and operational stages.
Gender and social dimension	It is expected that KNNL should carryout meaningful consultations that are gender inclusive and responsive with various institutions primarily the Contractor and the WUCS on an ongoing basis throughout the project cycle.	This activity needs to carried out on a quarterly basis and monitored.

ENVIRONMENTAL RELATED ACTIVITIES CARRIED OUT BY THE PSC



Construction Management and Quality Control Workshop held at Shivamogga on February 27, 2016:
Discussion on Environmental and Social Safeguard Issues



PSC with the RPP's Officials on June 28, 2016: PSC explained the various safeguard requirements and their importance to the Contractor and his staff



Make-shift Labour Quarters provided by the Contractor with Water and Sanitation Facilities



Temporary Shelters provided by the Contractor for labour for short breaks–June 28, 2016

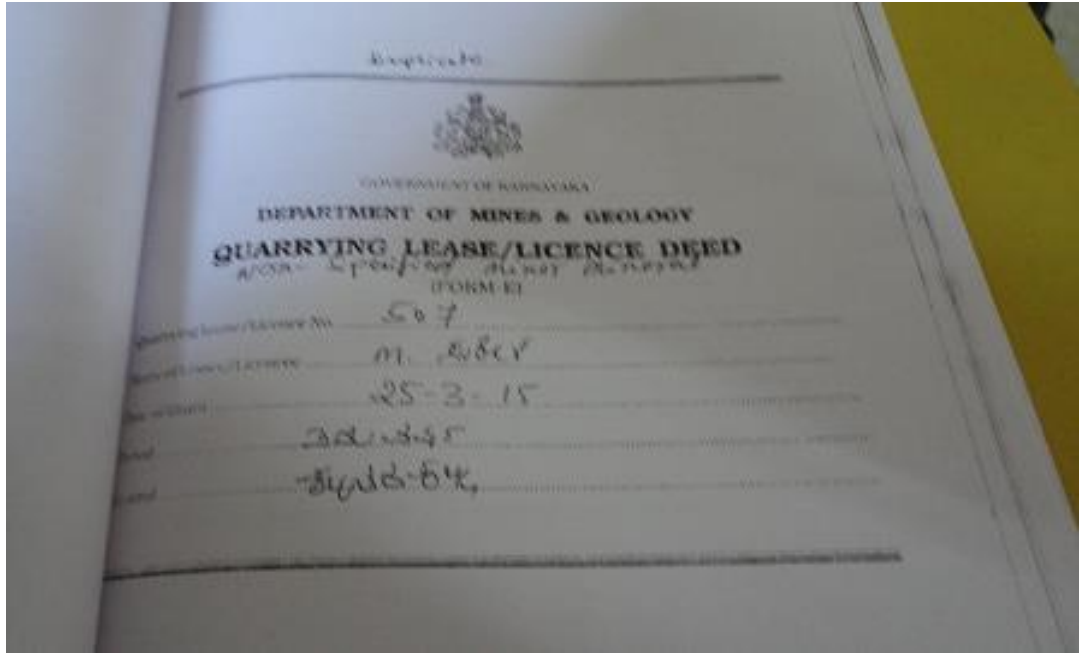


PSC Staff at the construction site to inspect the Silt Disposal Practices of the Contractor –June 28, 2016

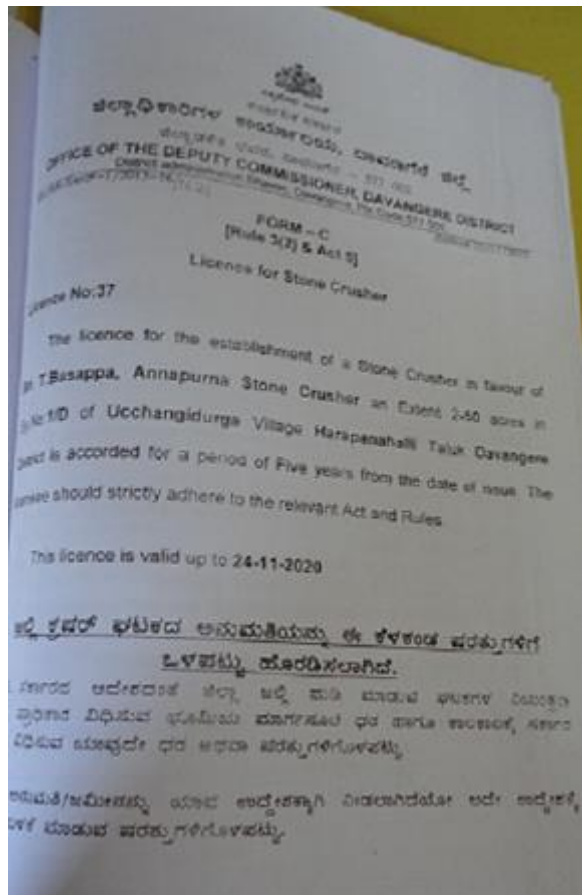


Disposal of Silt as initially practised by the Contractor-June 28, 2016

IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN BY THE CONTRACTOR



Quarrying Licence obtained by the Quarry Owner for a period of 5 years from 25.03.2015



Licence provided by Deputy Commissioner, Davangere District for Stone Crusher



Kagekodmagge WUCS CAD area: Arecanut Trees along the field canals



Realigning field canals to save arecanut trees: prevailing upon an Arecanut Farmer



Implementation of the EMP-Review by PSC with the Contractor



Safety Signs prepared and used by the Contractor at relevant construction zones

Consent For Operation (CFO-Air,Water)		Karnataka State Pollution Control Board - Shivamoga Plot No.156, Auto Complex Industrial Area, Shivamoga-577201, Tele : 08182-268890
PCB ID: 31904	SMALL	
Consent No. AW-103500	GREEN	
Valid upto: 25/02/2018		

(This document contains 6 pages including annexure)

Combined Consent Order No: AW-103500

Date: 20/01/2017

Combined consent for discharge of effluents under the Water (Prevention and Control of Pollution) Act, 1974 and emission under Air (Prevention and Control of Pollution) Act, 1981

- Ref: 1. Application filed by the industry / organization on 04/01/2017
 2. Inspection of the industry/organization by RO, - Shivamoga on 20/01/2017

Consent is hereby granted under Section 25(4) of the Water (Prevention & Control of Pollution) Act, 1974 (herein referred to as the Water Act) & Section 21 of Air (Prevention & Control of Pollution) Act, 1981, (herein referred to as the Air Act) and the Rules and Orders made there under and subject to the terms and conditions as detailed in the Schedule Annexed to this order.

The Occupier is authorized to operate /carryout industry/activity & to make discharge of the effluents & emissions conforming to the stipulated standards from the premises mentioned below:

Location:

Name of the Industry: M/s Rpp Infra Project Ltd
 Address: ODFA, Old Kodali, Bhadravathi, Shivamoga
 Industrial Area: Not in LA, Bhadravathi,
 Taluk: Bhadravathi, District: Shivamoga

Discharge of effluents under the Water Act:

Sr	Water Code	WC(KLD)	WTQ(KLD)	Remark
1	Domestic Purpose	2.000	1.100	
2	Manufacturing Processes	10.000	0.000	

Discharge of Air emissions under the Air Act from the following stacks etc.

Sl. No.	Description of chimney/outlet	Limits specified refer schedule
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The details of Sources, control equipments and its specification, type of fuel, rate of emissions, constituents to be controlled in emissions etc. are detailed in Annexure-I.

The consent for operation is granted considering the following activities/Products:

Sr	Product Name	Applied Qty/Month	Unit
1	Concrete Mix	6250.000	CUM

This consent is valid for the period from 04/01/2017 to 25/02/2018

For and on behalf of the
Karnataka State Pollution Control Board

Printed through XGN ENVIRONMENTAL OFFICER

Consent to Operate the Batching Plant at the Devanarasipura Kodihalli Campsite issued by Karnataka State Pollution Control Board

	Consent For Operation (CFO-Air,Water)		Karnataka State Pollution Control Board - Shivamoga Plot No.156, Auto Complex Industrial Area, Shimoga-577204. Tele : 98182-260090
	PCB ID: 31906	SMALL	
Consent No. AW-103561 Valid upto: 25/02/2018		GREEN	
(This document contains 6 pages including annexure)			

Combined Consent Order No: AW-103561

Date: 20/01/2017

Combined consent for discharge of effluents under the Water (Prevention and Control of Pollution) Act, 1974 and emission under Air (Prevention and Control of Pollution) Act, 1981

- Ref: 1. Application filed by the industry / organization on 17/01/2017
 2. Inspection of the Industry/organization by RO, - Shivamoga on 20/01/2017

Consent is hereby granted under Section 25(4) of the Water (Prevention & Control of Pollution) Act, 1974 (herein referred to as the Water Act) & Section 21 of Air (Prevention & Control of Pollution) Act, 1981, (herein referred to as the Air Act) and the Rules and Orders made there under and subject to the terms and conditions as detailed in the Schedule Annexed to this order.

The Occupier is authorized to operate /carryout industry/activity & to make discharge of the effluents & emissions conforming to the stipulated standards from the premises mentioned below:

Location:

Name of the Industry: M/s. Rpp Infra Projects Ltd
 Address: 61 Extent 1A-20, Thimlapura Village, Bhadravathi(Te) Kallhol(P), Shivamoga
 Industrial Area: Not in I.A. Thimlapura (V)
 Taluk: Bhadravathi, District: Shimoga

Discharge of effluents under the Water Act:

Sr.	Water Code	WCKE(B)	WWCKE(B)	Remark
1	Domestic Purpose	2.000	1.200	
2	Manufacturing Processes	18.000	0.000	

Discharge of Air emissions under the Air Act from the following stacks etc.

Sl. No.	Description of chimney/outlet	Limits specified refer schedule
The details of Sources, control equipments and its specification, type of fuel, rate of emissions, constituents to be controlled in emissions etc. are detailed in Annexure-I.		

The consent for operation is granted considering the following activities/Products;

Sr	Product Name	Applied Qty/30days	Unit
1	Concrete Mix	2700.0000	CDM

This consent is valid for the period from 17/01/2017 to 25/02/2018



N. Y. S. Shivamoga
20/01/2017

For and on behalf of the
 Karnataka State Pollution Control Board

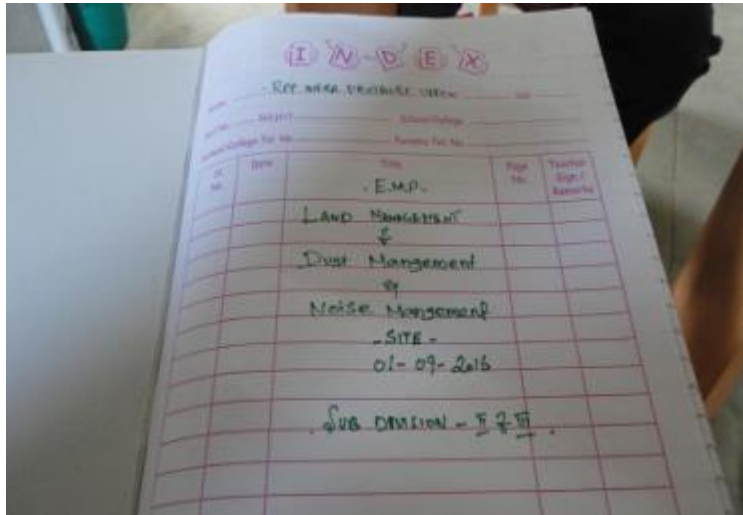
Consent to Operate the Batching Plant at the Thimlapura Campsite issued by Karnataka State Pollution Control Board



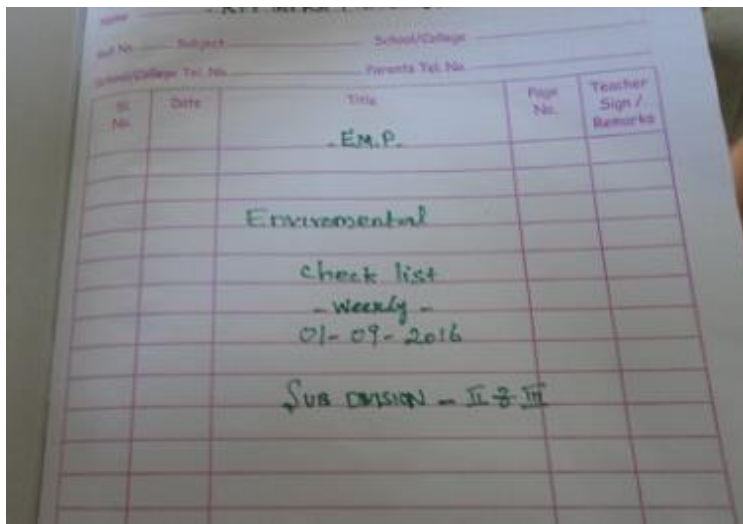
PSC visit to the Timlapura Campsite



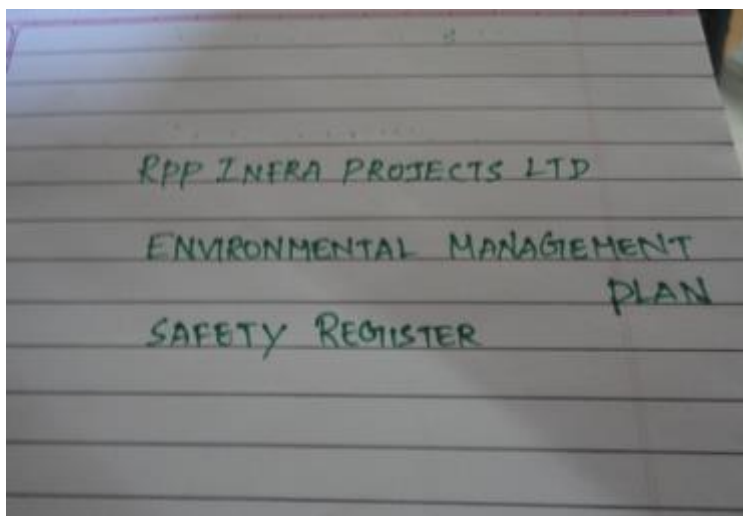
Contractor watering the Timlapura Campsite to prevent dust generation-unannounced visit by PSC to the campsite on 03.02.2016.



EMP Documentation maintained at the Devanarasipura Kodihalli Campsite



EMP Checklist maintained at the Devanarasipura Kodihalli Campsite



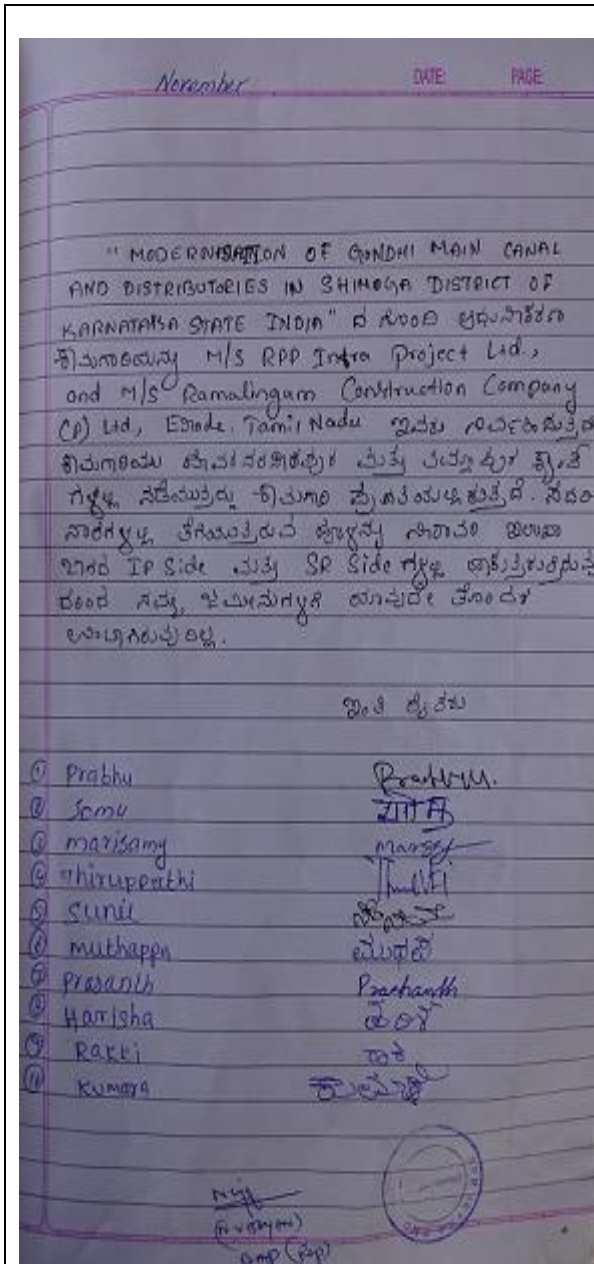
EMP Safety Register at the Devanarasipura Kodihalli Campsite



Burrow Site used for Right Bank Canal Rehabilitation Work



Safety Signboards at Construction Site



Monthly Acknowledgement from residents near construction site that the Contractor is carrying out construction work without causing any problem to the nearby residents



Farmers acknowledging that their routine work is not being hindered by the Contractor during the rehabilitation work



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Jawaharlal Nehru National College of Engineering

(Affiliated to Visvesvaraya Technological University & Recognized by AICTE & Accredited by FIMA)

DEPARTMENT OF CIVIL ENGINEERING

SHIMOGA - 577 204
 KARNATAKA STATE

Ref. No.: JNNCE/CE/2016-10

To,
 The Asst Executive Engineer
 KNNL NO-3 BRLBC Sub division,
 Bhadravathi, Shimoga-Dist.

Sir,

SUB: Testing of Water sample, for the work of Modernization of Gondi main canal and distributaries in Shimoga dist of Karnataka state, India,
 Ref: Your letter: AEE/KNNL/NO-3/BRLBC/SD/DDVT/Water/ 562
 Date: 17-03-2016

(Aggt. No 48/2015-10 Date 26-02-2016)

Sl No	Parameters	Results	Limits
1	pH	7.2	6.5-8.5
2	Acidity mg/L	12	200
3	Alkalinity mg/L	90	300
4	Hardness mg/L	100	500
5	Calcium mg/L	22	75
6	Chloride mg/L	18	250
7	Colour/ Smell	Nil	-
8	Dissolved Oxygen mg/L	5.6	3-8.5
9	Turbidity NTU	2	10 NTU
10	Total dissolved solids mg/L	112	500-1000
11	Iron mg/L	0.003	0.3
12	Fluoride mg/L	00	1.6
13	Sulphate mg/L	14	250

Note: Sample supplied by client is Potable

[Signature]
 Lab Instructor

[Signature]
 Staff-in-charge

[Signature]
 Coordinator

[Signature]
 Principal

[Signature]
 Assistant Executive Engineer
 KNNL BRLBC, No-3, Sub-Divn
 Bhadravathi

Results of groundwater sample collected at the Devanarasipura Kodihalli Campsite issued by the laboratory of a reputed engineering college; JNNCE, Shimoga