

INITIAL ENVIRONMENTAL EXAMINATION

November 2015

Loan 3032-VIE: Productive Rural Infrastructure Development Project in the Central Highlands

Subproject: Repairing, Upgrading Dak Dam Irrigation System and Rural Infrastructure In Kon Vang, Kon Ray District, Kon Tum Province

CURRENCY EQUIVALENTS

(as of August 01, 2015)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	\$0.0000472
\$1.00	=	VND 21,175

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected persons
CEP	Commitment on Environmental Protection
CPC	Communal People's committee
CPMU	Central Project Management Unit
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
DPC	District People's Committee
EMP	Environmental Management Plan
DARD	Department of Agriculture and Rural Development
HH	Household
IMA	Independent Monitoring Agency
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
LIC	Loan Implementation Consultant
MONRE	Ministry of Natural Resources and Environment
PC	People's Committee
PPC	Provincial Peoples Committee
PPMU	Provincial Project Management Unit
SIR	Subproject Investment Report
UXO	Unexploded Ordnance

WEIGHTS AND MEASURES

km	–	kilometer
kg	–	kilogram
ha	–	hectare
m	–	meter

NOTE

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

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TABLE OF CONTENTS

I. INTRODUCTION	4
II. POLICY FRAME, LEGISLATION AND MANAGEMENT	5
2.1 ADB policy	5
2.2 Environment regulations of Vietnam government	5
III. SUBPROJECT DESCRIPTION	7
IV. DESCRIPTION OF EXISTING ENVIRONMENT.....	13
V. ENVIRONMENTAL IMPACT SCREENING.....	17
5.1 Positive impacts	17
5.2 Negative impacts.....	17
VI. ENVIRONMENTAL MANAGEMENT PLAN	27
6.1 Environmental impacts and mitigation measures	27
6.2 Environmental monitoring	40
6.2.1 <i>Environmental effect monitoring</i>	40
6.2.2 <i>Environmental compliance monitoring</i>	40
6.3 Building capacity for EMP implementation.....	43
6.4 Budget for EMP implementation	44
VII. IMPLEMENTATION RESPONSIBILITY AND REPORTING	45
7.1 Implementation responsibility	45
7.2 Report system.....	46
VIII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE	47
8.1 Public consultation in the subproject preparation phase	47
8.1.1 <i>Description of activities to date</i>	47
8.1.2 <i>Outcomes of the public consultation to date</i>	48
8.2 Consultation in future	48
8.3 EMP disclosure	49
IX. Grievance redress mechanism.....	49
9.1 Purpose of the mechanism.....	49
9.2 Grievance redress mechanism.....	49
X. CONCLUSION, COMMITMENT AND RECOMMENDATION	50
10.1 Conclusion	50
10.2 Commitment.....	50
10.3 Recommendations	50
XI. ANNEX.....	51
Annex 1: Public consultation images and at the subproject site	51
Annex 2: Minutes of public consultation	53
Annex 3: Minutes and diagram of mines and disposal yards.....	59
Annex 4: Results of monitoring environmental parameters	63
Annex 5: Environmental requirement into bidding document.....	65

LIST OF TABLES

Table 1: General information of the subproject.....	7
Table 2: Environmental baseline	13
Table 3: Environmental impact screening	17
Table 4: Environmental mitigation plan	28
Table 5: Environmental effect mmonitoring	40
Table 6: Environmental compliance monitoring.....	40
Table 7: Schedule of training on capacity building	43
Table 8: Budget for EMP implementation.....	44
Table 9: Responsibility of stakeholders	45
Table 10: Monitoring and reporting system	46
Table 11: Public consultation description	47
Table 12: Results of public consultation.....	48
Table 13: Expected public consultation activities	48

I. INTRODUCTION

The productive rural infrastructure sector project in the central highlands is funded by ADB. Ministry of Agriculture and Rural Development (MARD) is the project investor. This project will be implemented in the 5 provinces (Lam Dong, Dak Nong, Dak Lak, Gia Lai and Kon Tum) of the Central Highlands.

Long-term purpose of the project is to contribute to hungry alleviation and poverty reduction programs of the Government through sustainable development of the society, ecology and environment at community level by developing infrastructures for production, improving socio-economic conditions and living standards of people in the area. Short-term objectives of the project are (i) to rehabilitate and upgrade deteriorated or damaged irrigation system and rural roads; (ii) to strengthen management capacity and implementation of ODA projects, infrastructure management at community, province, districts and commune level to gradually improve living standards and conditions of the poor in the project area in the Central Highlands; (iii) to build models, institutional policies on "water saving irrigation technology for strategic and economic valuable plants" and "Management and exploitation of irrigation schemes sustainably with the participation of all economic sectors".

One sub-project of the project is "Repairing and upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang, Kon Ray District, Kon Tum province" will be implemented in Dak Rve town, Kon Ray district, Kon Tum province. Based on ADB's Safeguard Policy Statement 2009 (SPS), ADB has classified the Project as Category "B" and requires the preparation of an IEE.

The objectives and scope of this IEE are to (i) assess the existing environmental conditions along and in the vicinity of the subproject (ii) identify potential environmental impacts from the proposed components (iii) evaluate and determine the significance of the impacts; (iv) develop an environmental management plan (EMP) detailing mitigation measures, monitoring activities, reporting requirements, institutional responsibilities and cost estimates to address adverse environmental impacts; and (v) carry-out public consultations to documentary issues/concerns that stakeholders may have on the sub-project and to ensure that such concerns are addressed in the sub-project design and mitigation measures.

This IEE is prepared to meet the requirements of environmental safety of ADB and the Government of Vietnam. It includes 11 parts:

- (i) Introduction
- (ii) Policy frame, legislation and management
- (iii) Sub-project description
- (iv) Description of existing environment
- (v) Environmental impacts screening
- (vi) Environmental Management Plan
- (vii) Implementation arrangement, monitoring and reporting
- (viii) Public consultation and information disclosure
- (ix) Complaint Mechanism
- (x) Conclusion commitment and Recommendation
- (xi) Annexes

II. POLICY FRAME, LEGISLATION AND MANAGEMENT

2.1 ADB policy

ADB safeguard policy statement (SPS) 2009 imposes safeguard requirements for all its funded projects. The SPS 2009 clarifies reason, scope and contents of the environmental assessment. It guides to determine type of environment that will be implemented by using rapid environmental assessment (REA) checklist, and identify the category of project, finally prepares appropriate environmental requirements. Safeguard policy statement emphasizes necessary of efficiently implementing mitigation measures to:

- Avoid the project impacts on environment and affected people in possible areas;
- Minimize/mitigate and/or compensate adverse impacts on environment and affected people when the impacts are inevitable;
- Strengthen the system of measures and socioeconomic risk management capacity.

SPS requires preparing environmental safeguard document in the process of preparing a project including environmental management plan (EMP). The borrower/client needs to monitor EMP implementation. The monitoring will identify outstanding issues of EMP implementation and propose appropriate mitigation measures. Periodic monitoring report on EMP activities will be submitted to ADB every semi-annual during construction of the project.

Moreover, all subprojects under the loan 3032-VIE need to follow the specific guidance on environmental assessment as stated in the Environmental Assessment Review Framework (EARF) of the project, prepared by the project owner and approved by ADB. The subprojects under loan 3032-VIE only categorized as Category B or C will be included in the list of eligible subprojects for possible funding under the proposed Project. It is anticipated that all eligible subprojects will fall into Category B, whereby some adverse environmental impacts are expected, but of a lesser.

The subproject “repairing, upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang is selected based on the project’s EARF that may cause the insignificant impacts to the environment and ranked as categorized B. Thus an IEE needs to be prepared with an EMP enclosed.

2.2 Environment regulations of Vietnam government

The project must also comply with the environmental regulations. The Vietnam legal framework comprises of the following items:

- The Law on Environmental Protection adopted by the National Assembly of the Socialist Republic of Vietnam dated 1st January, 2015. The law regulates general environmental protection requirements, policies and resources for protecting the environment;
- Decree No. 18/2015/NĐ-CP on April 01, 2015 of the Government that regulates on environmental protection planning, strategic environmental assessment, environmental impact assessment (EIA) and environmental protection commitment (EPPs);
- Decree No. 127/2014/ND-CP on December 31, 2014, of the Government that stipulates environmental monitoring service activities;
- Decree No. 38/2015/ND-CP on June 15, 2015 of the Government that stipulates on waste and disposal management;
- Decree No. 179/2013/ND-CP on November 14, 2013 of the Government that stipulates administrative fines for environmental protection;
- Circular No. 27/2015/TT-BTNMT on May 29, 2015 of the Ministry of Environment and Natural Resources (MONRE) that guides details on strategic environmental assessment, environmental impact assessment and environmental management plans;
- TCVN 4118:2012: Vietnamese standards for irrigation works/systems and design requirements;

- QCVN 07:2009/BTNMT: National technical regulation on hazardous waste thresholds;
- QCVN 05:2013/BTNMT: National technical regulation on ambient air quality;
- QCVN 08:2008/BTNMT: National technical regulation on surface water quality;
- QCVN 26:2010/BTNMT: National technical regulation on noise;
- QCVN 27:2010/BTNMT: National technical regulation on vibration;
- QCVN 01:2009/BYT: National technical regulations on drinking water;
- QCVN 02:2009/BYT: National technical regulations on domestic water;
- QCVN 04 – 05:2012/ BNNPTNT: National technical regulations on irrigation works – main regulations on design.

III. SUBPROJECT DESCRIPTION

Table 1: General information of the subproject

DESCRIPTION	SUB-PROJECT DATA
I. GENERAL INFORMATION	
Sub-Project Name	Repairing and upgrading Dak Dam Irrigation System and Rural Infrastructure in Kon Vang, Kon Ray District, Kon Tum Province
Sub-Project type	Upgrading irrigation systems and rural roads
Sub-Project Owner	Department of Agriculture and Rural Development of Kon Tum (DARD Kon Tum)
Sub-Project owner's representative	PPMU Kon Tum
Address of Sub-Project Owner's representative	159 Duy Tan - Kon Tum city - Kon Tum province
Name and title of head of sub-project owner's representative	Dang Hai Trieu, director
Telephone, fax and email details of sub-project owner's representative	Phone: 0603861598; Fax: 0603861598 Email: bqlkontum@gmail.com
Full name of the PPMU's environmental officer	Ho Van Hung, Phone: 0603861598; Fax: 0603861598 Email: bqlkontum@gmail.com
II. SUBPROJECT DESCRIPTION	
1. New or innovating or upgrading project	Repairing and upgrading rural infrastructure
2. Components of the subproject	The sub-project includes three components: (i) repairing and upgrading Dak Dam irrigation system, (ii) rebuilding an additional canal N1 that waters for 20 ha of two-crop rice and 30 ha of industrial trees (iii) Upgrading 8.2 km of earth rural road to become a concrete road of type A.
2.1. Irrigation component	<p>a. Structures grade: IV</p> <p>b. Head works</p> <p>b1. <u>Combined Weir & Spillway</u>: the highest of the weir, Hmax = 4,1m. The length of non-spilled weir is L = 28m, which is made of homogeneous earth K95. The width of the weir's top is B = 3m. Elevation of the weir's top is 666m. The designed overflow water column is 2.6m. The flooding discharge flow is 155.6m³/s. Bottom consumed capacity are Db = 80cm, and Lb = 12.9m. The elevation of flooding overflow threshold is 663.5m. Structure of spillway is made of concrete M150 and M200.</p> <p>b2. <u>Water intake</u>: underground sewers have diameter D = 400mm, 5mm in thick. Intake is made of processed steel pipes, with segment length is 4m; elevation of bottom head is 662.80m.</p> <p>c. Canal and other structures on canal</p>

DESCRIPTION	SUB-PROJECT DATA
	<p>c1. <u>The main canal</u> is 415,7m in length and made of steel pipes D400mm. Along the pipe, there are anchor pedestals made of concrete M150. Structures on canal include sewers at the end of canal N2, irrigation sewers, water containing tank.</p> <p>c2. <u>Canal N1</u> with total length is 537.7m. its rectangular cross section is (40*60) cm. It will utilize the old canal of 268m in length at the section of K0 ÷ H13, and build a new 269.7m section with concrete structure M200. Structures on canal includes irrigation culvert, canal bridge made of concrete M150, M200.</p> <p>c3. <u>Canal N2</u> with the total length is 728.7m, made of steel pipe with D = 200 ÷ 300mm, its thickness is 5mm. Along the canal are anchor pedestals, which are made of concrete M150. Structures on the canal include 01 underground culvert and 06 discharge tanks for irrigation;</p> <p>c4. <u>Canal N2-2's</u> length is 195m it is made of steel pipe that has D of 200mm and thickness of 5mm. Works on the canal include a water collection tank at the end of the canal.</p>
2.2. Road component	<p><u>Road grade</u>: Rural Road that has technical standard according to Decision No. 315 / QD-BGTVT</p> <p><u>Total length</u> (L) is 8,206 m, of which (i) Grade A has a length of L=7,203 m (ii) Grade C is L of 1,003 m</p> <p><u>Road surface</u>:</p> <ul style="list-style-type: none"> + Grade A: Width is Bn= 5.0m, Bn roadbed; pavement width is Bm= 3.5m; side road is Bl= 2 * 0.75m; + Grade C: Width is Bn= 3.0m, Bn roadbed; pavement width is Bm= 2.2m; side road is Bl= 2 * 0.5m; <p>Designed speed is Vtk=10-15km/h. designed load of pavement is 6 tons/axis. Slope of talus of excavated foundation is 1:1; embanked slope is 1:1.5. Street slope is im = 2%; curb is il = 4%. The designed flood frequency for embankment, culverts, small bridges is P = 4%.</p> <p><u>Road surface structure</u>: cement concrete</p> <p>Horizontal drainage work</p> <ul style="list-style-type: none"> + Material: Eternal reinforced concrete; + Frequency of designed flood: P = 4%; + Designed load: H30-XB80; + Bridge width: B = 5 + 2x0.5 = 6m including 01 bridge of 6m long (Km0 + 492 and 01 bridge of 33m (Km2 + 838); + Drain width: By the roadbed. <p><u>Along drainage</u>: trapezoidal earth ditches (40x40x120) cm with the vertical position slope is i> 4%, at households access points, ditches will be reinforced by concrete plates M200, 1x2 stone.</p> <p><u>Road safety</u>: Markers, signboards and protection structure will be installed as per the national technical standards for road</p>

DESCRIPTION	SUB-PROJECT DATA
	signboards: NTR 41: 2012/BGTVT.
Quantity and size of drainage culvert	There are total 27 culverts on the road in which all old culverts will be utilized, 12 new culverts will be constructed and 11 culverts will be reinforced
Quantity of bridges	Bridges width is $B=5+2 \times 0.5=5\text{m}$. There is a 6m long bridge at km 0+492 and another 33m long bridge at km2+838.
Irrigation and drainage structures	Drainage system will be located along the road. The longitudinal drainage ditch with trapezoidal shape (0.4x0.4x1.2)m will be at positions with slope is less than 6% (about 3,300m). The longitudinal slope is $\geq 6\%$, ditch is designed by cement.
Area of site clearance:	In basic, the road is along its old alignment with some minor adjustments. The main site clearance, compensation is temporary fence, trees and crops.
Other roads that intersect with subproject's roads	At the end of main road connects to district road. The Branch # 3 connects to the entrance of Dak B Ne at section of Km3+436
The main streams that across the road <ul style="list-style-type: none"> - Rivers - Lakes - Other streams 	The road crosses Dak Po Ne river, Dak Dam stream and other 7 small streams.
Number of hills and	Basically, road is along the old trail and passes through the village 3, 5, 6, 7, 8. Some sections will be adjusted in order to improve facet, however the road is just along the slopes of the hill slopes and mountains, .
III. Construction activities	
Commencement (month/year)	Planed in 2015
Finish (month/year)	Planned by 2017
Number of construction worker	Around 100 worker
Are there any camps for workers? Yes/no	There will be 03 camps, with estimated 90 workers will be mobilized on the sites
Will the construction take place in rainy seasons?	In rainy season there could be some activities such as site preparation, building camps. The main activities will be implemented in the dry season.
Number of concrete mixers	3 mobile concrete mixers could be mobilized on the sites
Temporary location and area occupation and material source	<p>- Demand and source of materials: The material is plentiful in the subproject area. Total volume of embankment, leveling soil is $1,700\text{m}^3$ which will be excavated from a hill at the section Km2+209, on the right side of the alignment (most of embankment soil is from excavated soil) with will be obtained agreement with local people/authorities.</p> <p>+ Stone, sand could be bought and transported from Dak Rong commune (stone mine is located at section Km146 of</p>

DESCRIPTION	SUB-PROJECT DATA	
	<p>National Road 24) in Kon Ray district, about 23km far from the subproject as recommended in the sub-project investment report. These areas were licensed for mining (see at annex 3).</p> <p>+ Other materials such as cement, steel, asphalt will be transported from Kon Tum city.</p> <p>- Temporary material gathering yards will be verified by contractors during construction whether they are at CPC public place or household house.</p> <p>Disposal areas: Excavated soil will be disposed at several areas which are agreed with local authorities such as (i) first area is about 20m on left side of main road at section of km2+160; (ii) the second area is at the beginning of canal N3, the storage capacity of the area is about 6.500m³; (iii) disposal area for foundation digging of head work is at 1 km on at right hand side of Dak Dam weir’s downstream. Agreement letters are enclosed in annex 3 of the IEE.</p>	
Measures to manage and balance excavation/embankment spoil/stone	As mentioned in the investment report, excavated spoil is 30,800m ³ while embankment volume is 20,000m ³ . Abundant volume will be utilized by households for leveling (HHs suggested as stated in the public consultation minute) or removed to the disposal areas as mentioned above.	
Approximate volume of construction materials	Stones: 8,500m ³ ; sand: 5.110m ³ ; steel: 111 tones; cement: 3,625 tones; excavated soil: 31,800m ³ ; embanked soil 21,000m ³ .	
Number and condition of vehicles and construction equipment	Bulldozer: 1; excavator: 2; roller: 2, truck: 10. All construction equipment need to be in good operating condition and periodically maintained.	
IV. Operation and maintenance activities		
Maximum speed	15 km/h	
Designed load	H13 - X60.	
Designed vehicles density	50 vehicles/day-night	
Maintenance activities	<p>Department of Economics and Infrastructure - People's Committee of Kon Ray district will be responsible for operation and maintenance the road. This agency will select a qualified unit to implement operation & maintenance activities after the sub-project is taken into operation.</p> <p>Irrigation Management Company of Kon Ray district will be directly responsible for operation & maintenance activities of irrigation component.</p>	
V. Resettlement		
No land acquisition and relocated households		
Affected households	0	
Severely affected households	0	
Relocated households	0	
Total acquired area (ha)	Temporarily = 0	Permanently =0

DESCRIPTION	SUB-PROJECT DATA	
Acquired agricultural land area (ha)	Temporarily = 0	Permanently =0
Acquired forestry land area (ha)	Temporarily = 0	Permanently =0
Acquired aquaculture land area (ha)	Temporarily = 0	Permanently =0
Acquired residential land area (ha)	Temporarily = 0	Permanently =0
Acquired garden land area (ha)	Temporarily = 0	Permanently =0
Other acquired lands (ha)	Temporarily = 0	Permanently =0
VI. The Subproject cost		
Total subproject cost (VND)	Estimated 73,444,038,000 VND.	

Map of the subproject "repairing and upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang, Kon Ray district, Kon Tum province"

Đường huyện lộ
Đường liên thôn
Đường TĐA triển khai

- District road
 - Inter-village road
 - The subproject road
 - Residential site
 - New bridges
 - Community house
 - School
 - Stream, canal/river

thôn 3
thôn 4 (Ngọc Tem)
thôn 5
thôn 6
thôn 7
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Đak Po Ne
ngâm
lâm trường Bộ Măng Đen

IV. DESCRIPTION OF EXISTING ENVIRONMENT

Results of survey and baseline environment data at the subproject was collected by the safety policy consultant (SPC) in 4/2015 summarized as below:

Table 2: Environmental baseline

DATA ITEM	SUBPROJECT DATA
4.1 PROJECT LOCATION	
Town	Dak Rve
District	Kon Ray
Province	Kon Tum
Geographical position	14° 19' 55" - 14° 46'10" latitude 108° 03'45" - 108° 22'40" longitude
4.2 NATURAL ENVIRONMENTAL CONDITIONS	
Air quality	<p>The subproject is located in the mountainous area. No industrial or mining activities are taking place therefore no sign of the air quality pollution and degradation have been recorded.</p> <p>Air quality monitoring results which conducted by the Environmental Monitoring Center of Kon Tum province in September 2014 at the center of Dak Rve town showed that air quality around the sub-project is good. All parameters are within limits and lower than those specified in QCVN 05: 2013/BTNMT (the dust level is 106 µg/m³, SO₂ is 77 µg/m³, NO₂ is 40 µg/m³, lower than the permitted standard). See detail in the annex 4.</p>
Noise and vibration	<p>The project area is in mountain area where it hardly has industrial and mining activities and low traffic density. During the public consultation meeting with local people in April 2015, there were not any complaints on this issue raised by the attendants. According to results of noise monitoring measured by Environmental Monitoring Center of Kon Tum Province in 2014 at Dak Rve Town, noise level is only 61.2 dBA, lower than permitted standard). The noise and dust are mainly generated by road-going vehicles such as trucks, motorbikes etc.</p>
Climate and natural disasters	<p>The subproject area is influenced by the tropical monsoon and plateau tropical monsoon climate. The year is divided into two distinct seasons:</p> <ul style="list-style-type: none"> - The rainy season from May to October (accounting for 85% 90% of annual rainfall). - The dry season from November to April of the next year (10% -15% of annual rainfall). <p>The temperature:</p> <ul style="list-style-type: none"> - Average annual temperature: 23.6°C. - The highest temperature: 35.6°C. - The lowest temperature: 10.5°C. <p>Air humidity:</p> <ul style="list-style-type: none"> - Humidity average /year: 85% - The highest humidity month: 8, 9, 10 (85-95%) - The lowest humidity month: 1, 2, 3 (70-75%)

DATA ITEM	SUBPROJECT DATA
	<p>Wind: According to the meteorological data at the Kon Tum station (the closest station), the wind speed corresponding to the its frequency and direction is determined as follows:</p> <ul style="list-style-type: none"> - Average wind speed is 3m /s. Maximum wind speed is 20m/s. - Major wind direction West (W) and East (E). <p>Natural disasters includes: flooding and erosion during rainy season. Flooding often occurs in September and October. The cultivation areas are always flooded during this time when it is heavy rain.</p> <p>According to the meteo-hydrology station of Kon Tum, natural disasters such as flood, landslide in the area have not been taken place for recent years.</p>
Topography	<p>The subproject area is on the Truong Son mountain chain with jungles, hilly terrain, valleys and plateaus. Although the road goes into low, medium altitude areas of the mountain, its terrain is strongly split and can be divided into three types;</p> <ul style="list-style-type: none"> • Soil erosion that concentrates at slopes, mountain peaks; • Sedimentation that concentrates at mountain valleys, fields and gardens and banks of rivers and streams; • Half sedimentation and half erosion that concentrates at foothills, valleys in banks of rivers and streams;; <p>The Dak Dam irrigation work could be rebuilt in its old location</p> <ul style="list-style-type: none"> - Its topography of irrigated area is relatively flat so has been cultivated but since water is not available, so people mainly plant cassava. The rice growing area is mainly along canals N1 N2-1. - Although the sub-project area is in mountainous, so the possibility of erosion and landslides are likely to occur, especially in the rainy season.
Surface water resource	<p>Water resource in the subproject area is mainly from Dak Po Ne river, Dak Dam stream and other 07 small streams.</p> <p>Other small streams, their characteristic are short, high slope, which are taking place as the water supply for Dak Dam stream and Dak Po Ne river.</p> <p>Above river water sources supply for domestic and irrigation purpose of local people.</p>
Underground water	<p>Underground water is at the depth of 5m-15m and people use for domestic purpose.</p>
Surface water quality	<p>According to the monitored results of the Environmental Monitoring Center of Kon Tum in 2014 taken at 2 places in Dak Pone river showed that the surface water quality in the area is still under good condition. Most of the indicators were within allowed values of QCVN 09: 2008/BTNMT (see annex 4 for detail monitored results).</p> <p>People use the water source for domestic purposes.</p>
Flooding	<p>Flooding occurs only at cultivation area in valleys or adjacent to streams where altitudes are lower than residential areas and</p>

DATA ITEM	SUBPROJECT DATA
	roads. Flooding occurs rarely, which takes place when heavy rainfall continues several days.
Terrestrial fauna and flora	+ The main flora in the subproject area includes agricultural crops (paddy, cassava, maize, beans, coffee, pepper, rubber...); + Terrestrial fauna in the area includes cattle, pigs, chickens, etc.; + No wild animals have been found in the area.
Aquatic fauna and flora	+ Aquatic fauna: fish, shrimp, eels and snails ... + Aquatic plants: algae, duckweed, grass ... + No aquatic fauna & flora species listed in the Red Data Book of Vietnam
Protected areas	No ecological/protected area is within or near the subproject area
4.3 ENVIRONMENTAL AND SOCIAL CONDITIONS	
Unexploded bombs, mines	The road follows its existing foundation which was embanked and repaired annually, thus the ability of UXO is very small.
Land use	According to the Statistical yearbook of Kon Ray district in 2014: The total area of the Dak Rve town is 5,174 ha, in which: <ul style="list-style-type: none"> - Productive land: 1,242.11 ha (24%) - Forest land: 412.34 ha (8%) - The rest is agricultural land and unused land; Agricultural land is utilized efficiently for different purposes. Local people have good skills of cultivation and crop intensification. However, a larger agricultural area could not cultivate due to lack of irrigated water.
Residential area near the subproject	Villages 3, 5, 6, 7, 8 of Dak Rve town are located along the road. The nearest distance from the villages to the road is 1.5m.
Rural infrastructures	The survey found that infrastructure of Dak Rve town is in poor condition while the demand is increasing. Its transportation system is not synchronized and not connected due to lack of investment. The town has 3 kindergartens, 2 primary schools, 1 secondary school, 1 high school and 1 clinic. In the sub-project area, there is a low-voltage power system parallel to the upgraded road. However, according to observation, this power line is at least 3m from the edge of the road, so this power line will not be affected by the sub-project construction activities.
Agriculture and aquaculture	+ The major annual crops of the region are paddy, cassava, maize and perennial such as coffee, rubber, ... + The total aquaculture area of the town is 3.61ha
Population	According to the statistics data of Dak Rve town, in 2014 the population characteristic as the following: <ul style="list-style-type: none"> + Number of households: 1,384 households + Total population: 5,304 people; + Population density: 104 people / km²; + Average population growth rate: 1.41% / year;

DATA ITEM	SUBPROJECT DATA
	+ Poverty rate: 19.94%
Ethnic minority groups	<p>There are several ethnic groups living in the subproject area. The Kinh people accounts for 60% of population in the area. Following is other groups:</p> <p>+ Ba Na ethnic group: 305 people accounting for 5.8%</p> <p>+ Xo Dang ethnic group: 1,102 people, accounting for 20.8%</p> <p>+ Hre ethnic group; 347 people, accounting for 6.5%</p> <p>+ The rest are some other ethnic groups.</p>
Livelihood	<p>- Main livelihood of local people is agricultural production such as paddy, maize, potato, cassava, livestock and poultry;</p> <p>- Economic structure of Kon Ray district in 2013 combined as (i) industrial construction (18.61%); (ii) agriculture and forestry (57.65%) and (iii) commercial services (23.74%);</p> <p>- Number of employees: 2,852 peoples, accounting for 53.77% of the total population. The budget of 2014 is as the below:</p> <p>+ Total revenues in 2014: 3,443,324,200 VND.</p> <p>+ Total expenditure in 2014: 3,225,020,000 VND.</p> <p>+ Balances: + 218,304,200 VND.</p>
Cultural and natural heritages	In the subproject area, there are no cultural and natural heritages.
Public health	There are some diseases related to skin, dental, eye because people use fluoride contained water. Other diseases usually occur in summer such as diarrhea, dengue fever. In addition, a number of respiratory illnesses is also recorded such as sore throat, sinuses, oral diseases ... etc.
Traffic and transportation	In the subproject area, the road is unique one with very low traffic volume serving for local people. The main means of transport include pedestrians, bicycles, and motorcycles.

V. ENVIRONMENTAL IMPACT SCREENING

5.1 Positive impacts

Construction of the sub-project "Repairing and upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang" will create positive impacts on social society as follows:

- Productivity and rice output will increase by providing sufficient and stable water for 2 crops a year;
- Earth road will be upgraded to concrete road will create opportunities for the people in the villages accessing to public services and encourage economic development of the region;
- Production costs will decrease due to reduction of transport costs, agricultural products will be consumed easily;
- Upgrading 8.2 kilometers of earth road to concrete road in accordance to rural road category A and category C to serve daily activities and manufacturing of local people, from that improve landscape, minimize muddy road, slide in rainy season and contribute to a sustainable infrastructure.
- Construction the subproject is primarily implemented the current road. So, there is no relocation and no land acquisition
- Construction of the road will facilitate travel during the rainy season and dry season, thus it is favorable conditions for business operations, goods transportation;

In summary, through the construction sub-project "Repairing and upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang" will improve livelihoods and enhance life quality of the local people in the subproject region, promote economic and social development by investing rural infrastructure and promoting its efficiency. Creating opportunities for people to access, apply advance technology in agricultural production, improve productivity and diversifying agriculture, bring sustainable employment opportunities, reducing poverty sustainably and contributing to the program of building new rural and strategy of socioeconomic development of the locality. Ensure aesthetic and improve environmental quality in the subproject area.

5.2 Negative impacts

However, the subproject could also create several negative impacts, especially during construction phase, which need to be managed through appropriate mitigation measures. The negative impacts from subproject could be summarized in the following table.

Table 3: Environmental impact screening

impacts	Potential Impact				Brief description of impact location and scale
	Yes/ no	Minor or significant	Positive or negative	Temporary or permanent	
I. Pre-construction phase					

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Risk when detecting unexploded ordnance	yes	minor	negative	temporary	<p>Description: Unexploded ordnance detection along the constructed road & canals may be risky for detectors and local people. However the upgraded road is the existing one while the new constructed canals are located in the fields, which have cultivated so long, therefore the possibility of finding unexploded ordnance is very low.</p> <p>Affected level: Minor</p> <p>Location: along the whole road and canals</p> <p>Time: Short time during the detection and treatment time</p>
Impacts on HHs due to site clearance (land acquisition)	Yes	minor	negative	permanent	<p>Description: The road and canals will be constructed on the existing ones, only 33 households whose fence land (mostly) is acquired. Since the acquired land area of each household is not much and the results from public consultations show that all households agreed to donate their land for the sub-project. So far, all land donation minutes of each household have been prepared and signed by land owners, both husbands and wives and being certified by local authority.</p> <p>Affected level: Thus social impact due to land acquisitions is insignificant since all effected HHs agreed to donate their land for the subproject.</p> <p>Location: 33 households along the road</p> <p>Time: permanent</p>
Inappropriate construction plan in term of time to crop activities of local people	yes	minor	negative	temporary	<p>Description: Although the construction time is only 15 months but it can create significant impact on crops of local people. If the construction schedule takes place at the same time with crop activities of local people.</p> <p>Affected level: Minor, if an crop-based construction plan is prepared, consulted with local people before preparing the constructional activities</p> <p>Location: on all construction sites of the irrigation component</p> <p>Time: temporary</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Canal design is inappropriate with use and does not consider climate change	Yes	Minor	Negative	Permanent	<p>Description: Inappropriate canal design can be listed as (i) inappropriate consideration on risk of landslide and soil erosion (ii) it can become a dyke that blocks water flow and cause local flooding in rainy seasons. (iii) climate change/flooding issue has not been taken account into their design. According to "Report on Climate Change Scenarios of Vietnam, MONRE-2011", With medium emission scenarios (B2): By the end of the century, annual rainfall would increase by about 2 to 7% in most of the regions. In High Land Region, including Kon Tum, where to be affected lowest in compared to other areas in Vietnam, forecast is an increase about 3 % (2.1 % for Kon Tum). In general, the dry season rainfall would decrease and rainy season rainfall would increase. In dry season, rainfall decrease 10-14 % for High Land Region.</p> <p>However, the subproject will increase the water supply capacity to meet demands of water users through upgrading of main canal and branch canal, so that could reduce loss of water due to using existing earth canal, hopefully it resist with decrease of dry season rainfall.</p> <p>Addition, design of dry season rainfall for the subproject irrigated agricultural area should consider carefully about decrease of dry season rainfall due to this climate change.</p> <p>Affected level: Minor due to subproject is improvement projects from earth canal to concrete canal with stable slope, which resist with loss water & accommodate decrease of dry season rainfall</p> <p>Location: all canal to be upgraded</p> <p>Time: permanent</p>
Inappropriate Environmentally responsible procurement	Yes	N/A			<p>EMP included in the bidding document to ensure that the Contractor will aware and understands or has experience with implementation of mitigation measures, monitoring and reporting. Moreover, it also helps to ensure that the implementation cost of mitigation measures will be engaged in the civil work budgets.</p>
II. Construction phase					

impacts	Potential Impact				Brief description of impact location and scale
	Yes/ no	Minor or significant	Positive or negative	Temporary or permanent	
Landslide, soil erosion or sedimentation	Yes	Minor	negative	temporary	<p>Description</p> <p>In the work of excavating and filling the canal embankment, construction of the facilities on the canal (culvert transferring water to branch canal, flood spillway) if excavated soil is not collected then siltation will be occurred, obstruct the water transmission capacity from the main canal to branch canal</p> <p>The excavated soil will be used for upgrading of management/ production/ interior field road along the canal system</p> <p>Soil from excavation of canal construction, canal bank fill not collected causing sedimentation in the canal bed, preventing water flow from main canal into the branches; sedimentation may affect the rice fields of the local peoples in Dak Rve Town</p> <p>Location: whole road and canals.</p> <p>Affected level: since extents of the sub-project components are small and on the existing road/canal. The construction phase, especially excavation time, is short so the impact is insignificant.</p> <p>Time: temporary during the construction phase.</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Pollution surface water	Yes	Moderate	negative	temporary	<p>Description: surface water on Dak Po Ne, Dak Dam streams and other small streams surrounding the subproject area could be polluted due to (i) domestic waste water from worker camps; (ii) grease from construction machine maintenance and (iii) runoff water due to constructional activities during rainy days.</p> <p>Affected level: Very few number of workers and machines will be mobilized to the site, the , construction works will be scattered over 3km along the streams during 15 months. Moreover, the most excavated works need to be carried out in dry seasons to avoid delaying in construction schedule, which could help to reduce impacts on surface water. Beside, as observed, there are still some households are use water from these rivers/stream for domestic purpose thus an impacts on water could be affected to local people which need to be controlled. The impact level is moderate, an appropriate mitigation need to be implemented to manage.</p> <p>Location: Dak Po Ne, Dak Dam streams and other 6 small streams. Local people living along Dak Po Ne, Dak Dam streams.</p> <p>Time: temporary during the construction phase.</p>
Noise and vibration	Yes	Minor	negative	temporary	<p>Description: The subproject road is the unique one connecting villages 3, 5, 6, 7, 8 with center of the town. Noise from construction machines and from material transportation trucks may impact on residential areas along the upgraded roads.</p> <p>Affected level: The impact is insignificant because extent of the road construction is small then there are few number equipment will be mobilized to the site, the irrigation component is far from residential area (400m);</p> <p>Location: villages 3, 5, 6, 7, 8 and road users</p> <p>Time: temporary during the construction phase</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Air pollution	Yes	Moderate	negative	temporary	<p>Description: The construction activities will generate dust, air pollution, particularly in dry/sunny days. Dust could also be generated from excavation activities and operation of trucks on the inter-commune roads which need to be managed to reduce impacts on local people. Other air pollutant such as NO_x, SO₂... will be quite minor since the number of construction equipment mobilized on the site will be small.</p> <p>Affected level: The impact is insignificant because extent of the road construction is small and Irrigation component is far from residential area (400m);</p> <p>Location: villages 3, 5, 6, 7, 8 and road users</p> <p>Time: temporary during the construction phase</p>
Soil pollution	Yes	Minor	negative	temporary	<p>Description: Soil quality in the subproject area could be affected by (i) domestic waste water from worker camps; (ii) grease from construction machine maintenance and (iii) domestic and construction waste (solid waste). Soil could also impact due to scattering material and death concrete from construction site.</p> <p>Affected level: Few number of workers and machines will be mobilized, thus demand for using hazardous material is quite small. The excavated soil needs to be transported to disposal area and domestic solid waste need to manage as analyzed in Solid waste impact section.</p> <p>Location: The agricultural area long the irrigation canal and rural road component.</p> <p>Time: temporary during the construction phase</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Local flooding	Yes	Moderate	negative	Temporary/permanent	<p>Description: Constructing concrete canals or road that may block local water flows in rainy seasons and generate local flooding. Sometime, design is inappropriate or contractor will not fully follow the technical specification which could lead to wrong place of culvers or place equipment, material, spoil on the flow. The scattering construction material/waste to streams/river could also lead to block the water flow.</p> <p>Affected level: Normally, heavy flooding has not occurred in the subproject areas. Moreover, installation of curvets on road will be implemented in very short time and the construction work on the canal will not require to block water flow. Thus the impact is moderate if management measures will not be fully taken into account by contractors</p> <p>Location: Along both components</p> <p>Time: temporary during the construction phase, it can be permanent if it comes from design errors.</p>
Safety risk for road users and business during the road construction	Yes	Minor	negative	Temporary	<p>Description: The constructed road is unique one which connect the subproject areas with the towns/regions therefore construction activities may cause (a) traffic accidents for elderly or children when the road is under construction; (b) limitation of local people' business activities. Construction activities need to temporary encroach road surface which lead to high risk of traffic disturbance.</p> <p>Affected level: Insignificant, since extent of the excavation/embankment is small. The construction activities will be implemented section by section and the traffic volume on the road is quite slow.</p> <p>Location: along the road</p> <p>Time: temporary during the construction phase</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/ no	Minor or significant	Positive or negative	Temporary or permanent	
Impact on ecology	Yes	Minor	negative	Temporary	<p>Description: The subproject does not go through natural reserves, national parks and ecology with high value in terms of science which need to protect therefore it does not affect the ecology. However, workers can cut trees during site clearance and increase unsolved matters in surface water quality could create impacts on aquatic ecosystem.</p> <p>Affected level: since the upgraded road is on the existing one, site clearance is insignificant. Inventory of loss in April 2015 showed that there are about 300-400 trees including coffee, pepper, banana etc. to be cut for the sub-project. Aquatic value on the Dak Po Ne, Dak Dam streams and other 6 small streams is quite low.</p> <p>Location: Trees from fences of households along the road, Dak Po Ne, Dak Dam streams and other 6 small streams.</p> <p>Time: Temporary during site clearance</p>
Impacts of solid waste	Yes	Minor	negative	Temporary	<p>Description: Solid wastes in the construction phase including (a) non-toxic waste may be (i) construction waste (soil, sand, stone). The investment report shows that there will be about 10,000m³ abundant spoil (after balancing excavation and embankment. The amount if not to be collected, transported and treated may cause non-aesthetic or difficulty for cultivation activity later on. (ii) Domestic waste from worker camps is about 1.2kg/person day * 10 months (continuously) x 26 days x 50 workers equal about 16 ton, and (b) Toxic wastes can be oil mops, fuel boxes, chemical boxes. If these wastes are not collected, treated appropriately, they may pollute soil, water air and un-aesthetic.</p> <p>Affected level: Non-toxic waste as spoil is mostly re-used to embank the component. The abundant amount will be used by local households (idea of local people from public consultation in April 2015), thus actually abundant quantity is not much. Toxic waste is not much either. So the impact is insignificant.</p> <p>Location: Along both components</p> <p>Time: Temporary during site clearance</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Impacts on infrastructures	Yes	Minor	negative	Temporary	<p>Description: Per the survey result in April 2015 which conducted along the upgraded road, there is only low voltage line located far from the road (at least 4m). No water supply system or drainage system are found in the subproject area. Existing roads/sluices or bridges around the subproject area is very weak, without load signals. Over load trucks of contractors may destroy existing bridges, sluices or roads.</p> <p>Affected level: the impacts could be significant if over load trucks of contractors pass the infrastructures. However, in the SEMP, the contractor need to proposed appropriate transport plan to be approved.</p> <p>Location: All roads/sluices or bridges around the subproject area</p> <p>Time: Temporary during construction phase</p>
Social disturbance by worker gathering	Yes	Minor	negative	Temporary	<p>Description: Construction workers can cause social effects or disease transmission such as sore eyes, cholera, flu and respiratory problems. Social aspect: some social problems can appear such as gambling, drug addiction, prostitute, violence, conflict amongst workers, or between workers with local people. The workers have to get temporary residence certificate to avoid social disruption in the subproject area</p> <p>Affected level: Some social evils can appear such as gambling, drug addiction, prostitution, violence, conflict amongst workers, or between workers and local people. With a maximum of 100 workers, there is also a risk of sexually transmitted diseases (STD), including HIV/AIDS However, these problems are insignificant because of the limited construction time duration (15 months) with the small number of workers</p> <p>Location: villages 3, 5, 6, 7, 8 and Kon Vang town</p> <p>Time: Temporary during construction phase</p>

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Impacts on health of local people and construction workers	Yes	Minor	negative	Temporary	<p>Description: During the construction phase, dust and noise will be the main factors which directly affect health of the workers and the community, especially in case of safety regulations are not complied or managed properly such as sleeplessness, eye affection, skin disease and hear relative disease.... The workers may get sick because of unsafe living conditions, unsafe food and inappropriate personal protection equipment. Moreover, accidents and damages to human health and lives are likely to occur if the safety regulations are not complied or managed properly, there are no security fences and signs are provided for people to recognize the construction sites, particularly in dark and rainy conditions.</p> <p>Affected level: Small due to the small number of workers equipment will be mobilized on the site. The construction works will not require complicated skills and there are not excavated ponds.</p> <p>Location: villages 3, 5, 6, 7, 8 and Kon Vang town and workers.</p> <p>Time: Temporary during construction phase</p>
Impacts around the mines of soil, stone and sand	Yes	Minor	negative	Temporary	<p>Description: Soil for constructing will be mined at village 7 of Dak Rve town as agreed by local authority. This area was planned for soil pit therefore all activities will be under the control of the communal authorities.</p> <p>Affected level: Thus, impacts of dust, noise are insignificant. Sand and stone are mined at licensed mines in Dak Ruong commune and these sand, stone are mined by local companies. Impacts of this mining are insignificant because it was licensed and under the control of local authorities (Kon Ray district) and DARD via environmental commitment.</p> <p>Location: Mine in village 7.</p> <p>Time: Temporary during construction phase</p>
III Operational phase					

impacts	Potential Impact				Brief description of impact location and scale
	Yes/no	Minor or significant	Positive or negative	Temporary or permanent	
Canal obstructing or flooding because of not on time dredging	Yes	Minor	negative	Temporary	<p>Description: Sewer, canals are likely to be obstructed by flowing rainwater that sweeps soil, sand and stones while dredging is untimely. This will cause waterlogging.</p> <p>Affected level: insignificant</p> <p>Location: Along canals</p> <p>Time: during the operational phase</p>
Erosion or land side	Yes	Minor	negative	Temporary	<p>Description: Rainwater of heavy rain flows from the hills to canals and it sweeps soil, sand and stone depositing canals; land erosion at soil mines will increase on rainy days.</p> <p>Affected level: insignificant</p> <p>Location: Along canals</p> <p>Time: during the operational phase</p>
More traffic accidents	Yes	Minor	negative	Permanent	<p>Description: After upgrading the roads, the traffic density might increase because of higher speed of motorists, particularly youths when the road surface is at good status and not controlled by polices.</p> <p>Affected level: Unidentified</p> <p>Location: along the upgraded road</p> <p>Time: Long term in operational phase</p>

VI. ENVIRONMENTAL MANAGEMENT PLAN

From the analysis and evaluation of environmental impacts in section V, this section below outlines the environmental management plan (EMP), including (i) Environmental mitigation measures; (ii) Environmental monitoring; (iii) Capacity strengthening

6.1 Environmental impacts and mitigation measures

Table 4: Environmental mitigation plan

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
	<i>Pre-construction phase</i>						
1	Risk during detecting unexploded objects (UXO)	To ensure safety for local people and detecting workers	UXO remove plan need to consider the following information: - Coordinate with the related agencies at the design stage to identify if there is a potential UXO in the subproject sites; - If the related agencies identified that there is a potential threat of UXO, then engage a contractor to clear UXO; - Ensure that constructional contractors shall only commence site works after the UXO clearing firm has certified that the project areas are already been cleared.	PPMU, UXO detection agency, CPC	Along the subproject sites	Before construction activities	Cost to prepare the sub- project by PPMU
2	Impacts on HHs due to site clearance (land acquisition)	Minimizes social impacts to households along the sub project sites	- People agreed to donate their affected land and assets. In this regards, land acquisition must be done based on voluntariness of HHs through meaningfully public consultation	PPMU		Before construction activities	Cost to prepare the sub- project by PPMU
3	Inappropriate construction plan in term of cultivation schedule time to local people	It ensures that the sub- project does not interrupt, affect to farming activities	- Constructional plan needs to be consulted local authorities/people during preparing their working plans; - Construction method need to ensure the irrigation water for cultivation activities, include applying flow diversion method by temporary coffer dam for head works and	Construction contractors and PPMU	Whole alignment	Detail design and construction phases	Cost to prepare the sub- project by PPMU

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			canals construction; - Apply the section by section construction method in road component and ensure the accessibility for local people; - According to project documents, the material for subproject will be bought from existing sources, thus the material plan needs to be prepared and included the following requirement: <ul style="list-style-type: none"> ▪ Required materials, potential sources and estimated quantities available; ▪ Material supply manners: preferring to purchase from existing material quarries. ▪ Agreement with the local authorities ▪ Check with environmental permission/certification of the quarries to ensure that environmental impacts and mitigation measures have been considered by owners. ▪ Material transportation manner plans and schedules 				
4	Inappropriate canal design and inadequate climate change	Maximize benefit to local people from the project implementation	Design consultant and PPMU have to: - Consult with stakeholders, particularly with local people (users) during the design stages for any performance of extremely natural risks and change in local climate condition.	Design consultant , PPMU, Canal users	Irrigation component	Pre-construction and construction phases	Cost to prepare the sub-project by PPMU

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
	consideration		<ul style="list-style-type: none"> - Consideration of all suggestions of relevant stakeholders during design phase. - Climate parameter and its change in the part years need to be careful considered during identifying technical specifications of the canal and culverts. 				
II	Construction phase						
1	Landslide, soil erosion and sedimentation	It controls soil erosion and sedimentation risk	<ul style="list-style-type: none"> - Construction works need to be scheduled to avoid rainy season from May to October; - Applying the section by section construction method to complete each section if possible; - Covering material storage areas during rainy times; - Stabilizing all cut slopes, embankments, and other erosion-prone working areas while works are going on. - Re-plant vegetation cover in high slope sections of the road as soon as possible after excavated works 	Contractors	Whole alignment	During the construction phase	In construction contract value
2	Surface water source can be contaminated	It is to minimize water source contamination	<ul style="list-style-type: none"> - Discarded lubricant, other chemicals have to be kept in dry covered area or collected, transported and treated according to the Circular No. 36/2015-BTNMT dated on 01/09/2015 of MONRE; - Constructional wastes need to be transported by adequate manners to the 	Contractors	(i) On Dak Dam steam and along roads of villages 3, 5, 6, 7, 8	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			three agreed disposal areas; - Provide dustbins and mobility septic tanks at work to manage wastewater and domestic waste from worker camps site; - Disposal of solid wastes into canals, stream, other watercourses, agricultural field shall be prohibited - The placement of washing instruments/vehicles next to the water bodies, existing river, streams and canals will not be allowed such as: Dak Po Ne, Dak Dam streams and other 6 small streams. - Cover material storage areas when raining is needed. Temporary storage of construction and domestic waste on the sites will be no longer than 24 hours.		(ii) at the interchange between the road of the sub project and the stream and its branches (iii) worker camps		
3	Noise/vibration	It ensures noise/vibration at standard QCVN 26,27/2010/BTNMT	- Constructional machines and equipment need to meet standards of exhaust, noise, and vibration as regulated by the Government. Contractors needs to submit the documents proving that all constructional vehicles, equipment, and machines are checked and meet requirements noise and vibration generation of the current Vietnam standards; - All noise and vibration generation activities shall be restricted at rest time of local	CPMU. LIC, PPMU, contractors	Along canal N2 and upgraded road	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			people (12-13h and 20h to 6h) on road items; - Provision noise protection equipment for worker; - Inform local communities close to construction area on schedule and duration of construction works. Collect feedbacks from the community through, head of villages and CPC.				
4	Air pollution	It ensures air pollution complied with QCVN:05-2009/BTNMT	- Watering to minimize dust generation needs to be implemented at residential areas such as villages 3, 5, 6, 7, 8. The watering activities have been done at least once per day during the rainy season and twice a day during the dry season in the working areas; - All trucks must be covered when transporting materials/wastes; - Equipment/vehicles have to be verified and licensed; - Provision of a washing point near constructional site or villages 3, 5, 6, 7, 8 to wash all vehicles before going out construction sites. - All material/waste storages shall be located away from any households and sensitive areas.	CPMU, LIC, PPMU, contractors	Whole alignment close to residential areas	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
5	Soil contamination	It is to minimize soil contamination	<ul style="list-style-type: none"> - No construction materials and/or wastes fall into agricultural land in the subproject areas; - Discarded lubricant, chemicals must be kept in dry area or covered if raining; - Toxic waste, if any, need to be collected, transported and treated according to Circular No. 36/2015-BTNMT dated on 01/09/2015 of MONRE; - Regularly collect solid wastes and transport to disposal areas have agreed with local authorities/local people as i) first area is about 20m on left side of main road at km2+160; ii) the second area is at beginning of canal N3. Storage capacity of these areas is about 6.500m³ with 2600m²; iii) disposal area for foundation digging of head work at 1 km of downstream of Dak Dam weir's at right hand side; - Provide dustbins and mobility septic tanks in all construction sites and worker camps; - Waste water from worker camps needs to be collected and treated before discarded to environment. 	CPMU. LIC, PPMU, contractors	Whole alignment	During the construction phase	In constructional contract value
6	Local flooding	Ensures that the construction does not interrupt farming activities	<ul style="list-style-type: none"> - No construction materials and/or wastes fall into the constructed canal and other canals such as Dak Po Ne, Dak Dam streams and other 6 small streams; 	contractors	Along both components	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			<ul style="list-style-type: none"> - Setting up appropriate construction schedule at the site to avoid rainy season, especially for excavation activities; - Placement of washing instruments/vehicles next to the rivers, streams, existing canals will not allowed such as Dak Po Ne, Dak Dam streams and other 6 small streams. 				
7	Traffic accident may increase and difficulty for usual life of local people	It ensures traffic safety and minimize life disturbance of local people	<ul style="list-style-type: none"> - Install signals at site to control speed of vehicles or signal of work under construction, especially at the intersections; - Install lamps at night at construction sites where are near residential areas such as villages ; 3, 5, 6, 7, 8; - Provide temporary access to local roads or households if any intervention occur; - Inform the community about construction schedule through informal public consultation or any local people meetings and notice board. 	contractors	Upgraded road	During the construction phase	In constructional contract value
8	Impact on terrestrial ecology	to minimize impacts terrestrial ecology	<ul style="list-style-type: none"> - Cut trees outside of right of way by workers will be banned - Re-plant vegetable cover section by section after construction work completed; - Appropriate management of wastewater, domestic solid waste on the sites 	contractors	Upgraded road	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
9	Solid wastes	to minimize impacts to environment by solid wastes	<ul style="list-style-type: none"> - Abundant volume has to be monthly removed to sites agreed with local authorities as i) first area is on left side of main road at km2+160; ii) the second area is at beginning of canal N3; iii) disposal area for foundation digging of head work at 1 km of downstream of Dak Dam weir's at right hand side. Beside the above places, local people may request contractors to utilize the waste but they must get approval from local authority. - Equip dustbins and mobility septic tanks to work sites ((it is proposed that there will be 4 dustbins and 2 mobility septic tanks provided at each construction site ; - Sign a contract to weekly collect solid waste at worker camp with a local agency - Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited; - Burning of construction and domestic wastes shall be prohibited 	contractors	Construction sites and worker camps	During the construction phase	In constructional contract value
10	Impacts to existing infrastructure	to minimize adverse impacts to existing infrastructures	<ul style="list-style-type: none"> - Work with existing infrastructure owners (electricity, water...) to identify locations of underground items if any; - Obtain an agreement with local authorities in using some certain transport routes to transport materials and constructional wastes. It is to control and minimize 	contractors	Road component	During the construction phase	In constructional contract value

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			<p>damages to existing transport infrastructure due to the subproject construction;</p> <ul style="list-style-type: none"> - Load capacity of trucks do not exceed local bridge/road's (it is best of less than 5 ton/axis/truck); - All public facilities including transport infrastructure must be fully recovered as its original status after completing constructional works 				
11	Disturbance to local people's life due to crowded workers	To minimize disturbances to local people's life due to workers	<ul style="list-style-type: none"> - A recruitment priority should be given to local workers; - Register provisional residence for workers staying at camps; - Contractor needs to set up the camp sanitation regulations on the sites; - Carry out HIV/AIDS prevention program and sex transmission infection; - Educate workers on appropriate behavior for interactions with local community and risks of communicable diseases. 	Contractors	Construction sites and camps	During the construction phase	In constructional contract value
12	Risks to health and safety to local people and workers	To ensure good health and safety to local people and workers	<ul style="list-style-type: none"> - Provide sufficient labor safety to workers such as shoes, helmets etc. And instruct workers how to use; - An early aid kit will be provided at each construction site to ensure patients can receive first aid timely before transporting them to medical station/hospital 	Construction contractor	All subproject items	During construction phase	Included in the construction contract

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
			<ul style="list-style-type: none"> - Install power network at site in accordance with safety regulations of the state and ensure that power lines or outlets will be kept at dry and safe places; - Install warning signs at the electric receptacles; - Install information signs about the project, the labor regulations at site; - Install fences, warning signs at the intersection between the drains and roads; - Remain the light during the night time on all construction sites. - Timely repair damaged road surfaces and bridges; - Construct temporary drainage ditches to drain water at site, prevent waterlogging. 				
13	Cultural and historical heritages	Ensure cultural and historical heritages are not impacted	<ul style="list-style-type: none"> - Do not upload/unload material and park vehicles within 50m from the temple, pagodas, worship areas, cemeteries and other cultural works, if any; - When a tombstone was found during construction must coordinate with local authorities to relocate and the map of the tombstone before and after relocation must be redrawn; - Pause construction, protect the site, inform the CSC to be instructed how to deal with archaeological structures. 	Construction contractor	All subproject items	Pre-construction phase and during construction phase	Included in the construction contract

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
14	Environmental recovery	Control the Odor generation, unsafety and sanitation condition to local people	<p>Before construction is completed, the contractor will move all construction wastes and unused materials from the sites to approved disposal areas; Complete the environmental recovery at:</p> <ul style="list-style-type: none"> Construction waste disposal location Material soil pit and borrow areas Working sites <p>Reinstate and ensure good condition for any effected public facilities; Environmental recovery at three disposal areas.</p>	Construction contractor	All subproject items	During construction phase and before hand over	Included in the construction contract
III. Impacts in the operation phase							
1	Canal obstructing of flooding	Ensure drainage	<ul style="list-style-type: none"> Regularly check and maintain canals Periodically dredge canals after each harvest or after heavy rain that erode hillside. 	<ul style="list-style-type: none"> Irrigational exploration station of district and province; Official s of communes 	- Irrigational canals and water intake gates.	During operational phase	Operational and maintenance cost
2	Erosion or land slide	Manage erosion and land slide	<ul style="list-style-type: none"> Consider the necessary of reinforcing canal banks; Plant vegetation cover on canal bank; Regularly maintain canals; 	Irrigational exploration agency	All canals	During operational phase	Operational and maintenance cost

No.	Impacts	Objectives	Mitigation Measures				
			Mitigation measures	Responsibility	Location	Time	Cost
3	Traffic accident increase	Ensure traffic safety	<ul style="list-style-type: none"> - Install speed limit signs, load limit signs; ensure traffic safety at residential areas and at road intersections; - Propagandize to enhance awareness of traffic safety for local people. 	Department of Infrastructure - Economy of Kon Ray district	Along the upgraded roads especially at the road intersection	During operational phase	Operational and maintenance cost
4	Impact on water quality due to use of fertilizer or pesticide	Mitigate impacts on surface water	<ul style="list-style-type: none"> - Cooperate with the extension service agencies to ensure that farmers receive training on sustainable farming methods, pest management; - Pits to collect covers of pesticides, fertilizer must be constructed far from water reservoir and flood areas; or recommend people collecting these wastes, do not scatter them on field, canals. 	DARD of Kon Tum; Operation & Management team of Dak Rve	Irrigational canals and water intake gates	During operational phase	Include in operational and maintenance cost

6.2 Environmental monitoring

Environmental monitoring consists of (i) Environmental effect monitoring and (ii) Environmental Compliance Monitoring

6.2.1 Environmental effect monitoring

Table 5: Environmental effect monitoring

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction Stage						
Control of air quality and noise impact	Dust generation or operation of noise equipment	Along the road component	Observation, document review and public consultation	Weekly	Contractor	Included in the Monitoring Consultant Contract
Control of water quality	Sediment loads, rubbish, oil or other visible pollutants	Significant water bodies crossed by canals	Observation, document review and public consultation, worker interview	Weekly and after large rain evens	Contractor	
Operation Stage						
Surface water quality	Turbidity, grease	Major Streams from which off take to irrigation canals is sourced.	Observation, document review and public consultation	2 times per year for first 2 years (1 time in wet season and 1 time in dry season)	PPMU	Included in operation cost
Soil quality	Evidence of salinity or acidification	At 3 representative locations in each subproject irrigated area	Observation, document review and public consultation	2 times per year for first 2 years (1 time in wet season and 1 time in dry season)	PPMU	

6.2.2 Environmental compliance monitoring

Table 6: Environmental compliance monitoring

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction Stage						
EMP implementation provisions in construction contracts, construction supervision contracts	Availability of EMP implementation provisions in contracts	N/a	Check contracts	First monitoring time	LIC, CPMU, PPMU	Included in the Monitoring Consultant Contract
Manpower to implement EMP	Environment staff mobilization at PPMU, supervisor, contractors	N/a	Discussion with stakeholders, document review	Six month period	LIC, PPMU, supervisor and contractors	ditto
Landslide, erosion and	Condition and capacity	Throughout construction	Observation, document	After large rain	Contractor/C onstruction	ditto

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
sedimentation controls	of controls Performance of all mitigation measure	site	review and public consultation	events	supervision consultant (CSC)	
Surface water pollution	Turbidity, grease Performance of all mitigation measure	Dak dam and six streams in the sub-project area	Observation, document review and public consultation	Random	LIC, PPMU, supervisor and contractors	
Soil contamination	Solid waste, grease availability Performance of all mitigation measure	Throughout construction site	Observation, document review and public consultation	Random	LIC, PPMU, supervisor and contractors	
Materials storage	Condition of materials storage area	Throughout construction site	Observation document review and public consultation and worker interview	Weekly	LIC, PPMU, supervisor and contractors	
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/ fuel leaks	Throughout construction site	Observation document review and public consultation and worker interview	Random	LIC, PPMU, supervisor and contractors	
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation document review and worker interview	Weekly	LIC, PPMU, supervisor and contractors	
Vegetation clearing	Boundaries of vegetation clearing	Areas of sensitive vegetation	Observation, document review and public consultation	Weekly during clearing works	LIC, PPMU, supervisor and contractors	
Solid wastes management on the site	Dustbins and mobility septic tanks at work site Check with waste generation, collected, transported and treated manners and documents Performance of all mitigation measure	In all construction sites	Observation, document review and worker interview	Weekly	LIC, PPMU, supervisor and contractors	
Waste disposal	Site cleanliness and condition; temporary waste storage area	Throughout construction site	Observation, document review and public consultation	Weekly	LIC, PPMU, supervisor and contractors	
Local flooding	Possibility of local flooding due to	Throughout construction	Observation, document	Random	LIC, PPMU, supervisor	ditto

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
	construction activities Performance of all mitigation measure	site	review and public consultation		and contractors	
Traffic accident may increase and difficulty for usual life of local people	Availability of signals or staff to control/guide road user at site	Road component at all villages around the subproject	Observation, document review and public consultation	Random	LIC, PPMU, supervisor and contractors	ditto
Impacts to existing infrastructure	Agreement letters between contractors and local authorities in using public facilities Types of damages; level of compensation; satisfaction from local authorities as well as local residents	In all construction sites	Observation, document review and worker interview	Weekly	LIC, PPMU, supervisor and contractors	Ditto
Impact on terrestrial ecology	(i) if are trees cut outside of ROW; (ii) if re-plant vegetable cover	Road component	Observation, document review and public consultation	Random	LIC, PPMU, supervisor and contractors	ditto
Disturbance to local people's life due to crowded workers	Status of workers: Registration to local authorities and conflicts available in the areas between local residents and workers	Throughout construction site	Observation, document review and public consultation	Random	LIC, PPMU, supervisor and contractors	ditto
Risks to health and safety to local people and workers	Equipment available; percent of workers equipped with; Provision of any warning signals in the sites Performance of all mitigation measure	Throughout construction site	Observation, document review and public consultation and worker interview	Weekly	LIC, PPMU, supervisor and contractors	
Cultural and historical heritages	Check any cases and performance of contractors	Throughout construction site	Observation and public consultation and document review	If any	LIC, PPMU, supervisor and contractors	
Environmental recovery	Clearance activities	Worksites, and disposal location	Observation and public consultation	Once before hand over	LIC, PPMU, supervisor and contractors	
Operation Stage						
Canal obstructing of	Ensure canals to be operated well	Irrigation component	Observation and public	6 monthly for first 5	PPMU	Included in

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
flooding			consultation	years of operation		operational stage budget
Risk of traffic accident increase due to better road surface	Controlling traffic accident	Road component	Observation and discussion with local authority	6 monthly for first 5 years of operation	PPMU	
Impact on water quality due to use of fertilizer or pesticide	Water usage safety	Households in vicinity of irrigation canals	Observation and discussion with local authority	6 monthly for first 5 years of operation	PPMU	
Erosion or land slide	Ensure the canals/road to be operated well	Both components	Observation and discussion with local authority	6 monthly for first 5 years of operation	PPMU	
Environmental recovery	Ensure environment is recovered	Both components	Observation and discussion with local authority	6 monthly for first 5 years of operation	PPMU	

6.3 Building capacity for EMP implementation

The relevant stakeholders need to ensure the EMP implementation as their responsibilities. All CPMU, PPMU, CSC, CC need to appoint officers/staffs to in charge of environmental management. However, most of these officers/staffs are also assigned for other works and they are not specialized in environmental management. Thus, to ensure EMP is implemented in compliance with sponsor policies and Vietnamese legislation, these officers/staffs must be guided /trained on EMP implementation capacity building. Training on EMP implementation must be held for different groups with different requirements.

- PPMU and CSC: The staffs that are in charge of environment will be trained (at least once in the first 3 months of the project) on monitoring and preparing environmental reports.
- Construction contractor: Will be trained (immediately after contract signing) on implementing mitigation measures and preparing reports.

Table 7: Schedule of training on capacity building

Agency	Session	Participant	Frequency of training	Duration and type	Responsibility	Cost
Kon Tum PPMU	Environmental monitoring and report preparation	Environmental staffs, engineers	1 time when starting the project and then update it, if any, depending on implementation	1 day of training	CPMU/ LIC	Included in the project management cost.
CSC	Environmental monitoring and report	People who are in charge of environment	1 time when starting the project and then update	1 day of training	CPMU/ LIC	Included in the project management cost.

Agency	Session	Participant	Frequency of training	Duration and type	Responsibility	Cost
	preparation	and people related to environmental management	it, if any, depending on implementation			
Construction Contractors	Implement mitigation measures	Main contractors report to PPMU	1 time when signing contract then update it, if any, depending on implementation	1 day of training, monthly report form	CPMU/LIC	Included in the project management cost.

6.4 Budget for EMP implementation

Table 8: Budget for EMP implementation

Item	Preparation phase	Construction phase	Operation phase	Total
Construction supervision consultant		Included in the contract with Kon Tum PPMU		
Internal monitoring of Kon Tum PPMU	Included in the project management cost of Kon Tum PPMU	Include in the contract of CC, CSC and Kon Tum PPMU management cost.	Province and local budget	Included in contracts and other operational budgets.
Implementing mitigation measures	Subproject preparation cost	Included in the construction contracts	Operation and maintenance cost	
Monitoring EMP implementation (undertaken by LIC)		Included in the contract between CPMU & LIC		
Public consultation and information disclosure	15,000,000 VND	15,000,000 VND	15,000,000 VND	45,000,000 VND

VII. IMPLEMENTATION RESPONSIBILITY AND REPORTING

7.1 Implementation responsibility

Three agencies, which are related directly to EMP implementation, are PPMU, CSC and CC. The responsibilities of relevant stakeholders in EMP implementation are presented as table below.

Table 9: Responsibility of stakeholders

Agency	Responsibilities
CPMU	<ul style="list-style-type: none"> - Recruit consultant for preparing safeguard policies; - Review, adopt and submit to ADB IEE reports; - Assign LIC to monitor EMP implementation; - Guide PPMU to integrate EMP into tender documents/ CSC contract; - Review monitoring reports of LIC and internal reports of PPMU. - Report EMP implementation to ADB. - Assign experienced staff to follow up and monitor EMP implementation.
LIC	<ul style="list-style-type: none"> - Prepare manual for EMP implementation and train on EMP implementation for PPMUs, CSCs and CCs; - Help PPMU integrate environmental safeguard requirements specified in the EMP into bidding documents/ construction supervision and construction contracts; - Periodically monitor EMP compliance every 6 months; - Report monitoring results and propose recommendations on EMP implementation to CPMU and sponsor every 6 months.
Kon Tum PPMU	<ul style="list-style-type: none"> - Kon Tum PPMU is liable for any recommendations regarding improvement of the project with the aim of protecting and maintaining the environment. It Includes environmental complaints and complaints resolution related to subproject implementation; - Appoint specialized personnel to monitor environment of the subproject; - Publicly post EMP information at CPC where the project goes through; - Integrate environmental requirements, including sanctions for failure to comply EMP into bids / contracts with CC and CSC; - Instruct and approve site EMP prepared by construction contractor; - Support and coordinate with the EMP implementation units; - Ensure adequate fund for EMP implementation; - Arrange and join capacity building training on EMP implementation conducted by LIC; - Periodically report EMP implementation to CPMU and DONRE.
Construction supervision consultant (CSC)	<ul style="list-style-type: none"> - Appoint staffs to be in charge of environment and participate in training courses conducted by LIC; - Review SEMP prepared by contractors and submitting it to PPMU to get approval. - Beside monitor construction quality, CSC also implement compliance monitoring on environmental safeguard of construction contractors every day as stipulated in SEMP; - Report monitoring results and findings to PPMU monthly;
Construction contractor	<ul style="list-style-type: none"> - Appoint staffs to monitor environmental issues of the construction. This staff can be a concurrent staff if the workload of environmental is not heavy. - Base on the EMP, CC will prepare a SEMP; - Implement mitigation measures to minimize potential negative impacts as instructed in the EMP;

Agency	Responsibilities
	<ul style="list-style-type: none"> - Closely coordinates with local communities to perform environmental mitigation measures during construction process; - Ensure that all construction activities have complete documents from the relevant authorities; - Implement all measures to minimize negative impacts and to protect environment; - Ensure that staff and employees understand the process and their duties in the EMP; - Report to PPMU the difficulties and problems, if any; - Report to stakeholders the environmental issues and coordinate with them to solve those issues;
Kon Tum PPC/DONRE	<ul style="list-style-type: none"> - Monitor any violation under policies on environmental management and protection of Vietnam; - Evaluate any change of the design which can cause environmental impacts;
DPC/DONRE	<ul style="list-style-type: none"> - Approve EPC of the subproject in accordance with the provisions of Vietnamese laws; - Monitor EMP implementation through internal monitoring system of the DPC.
Social organizations, women union and other associations	<ul style="list-style-type: none"> - Play a key role as a bridge between local community and PCs; - Community Monitoring; - Mobilize community participation in subproject implementation; - Combine with the PPMU and contractors to perform road measures to prevent public services from damage; - Participate in resolving environmental problems.
Local community	<ul style="list-style-type: none"> - In Vietnam, the community has the right and responsibility to regularly monitor environmental activities in the construction process to ensure that the rights and their safety is protected fully and mitigation measures are implemented effectively; - In case of problems, they will report to community team, contractors or PPMU.

7.2 Report system

Besides monitoring on EMP implementation, stakeholder is also responsible for periodic report EMP implementation. Table below shows the system of monitoring and reporting.

Table 10: Monitoring and reporting system

Phase	Report	Frequency	Responsibility	Submit to
Construction	Periodically report on implementation of mitigation measures: Present in details of EMP activities of the subproject/packages and monitoring results.	Every month	Construction contractor	Kon Tum PPMU and CSC
	Periodically report on EMP implementation of construction contractor: Present in details of EMP activities of the subproject and monitoring results.	Every month	CSC	Kon Tum

Phase	Report	Frequency	Responsibility	Submit to
	Periodically report on EMP implementation of the subproject: Present in details of EMP activities of the subproject and monitoring results.	Every 3 month during construction phase	Kon Tum PPMU	- CPMU; - DONRE of district;
	Periodically monitoring report on EMP implementation of the subproject: Present in details environmental activities of the subproject and activities in compliance with EMP of the subproject and monitoring results.	Every 6 month during construction phase	CPMU/LIC	ADB
Operation	Periodically report on EMP implementation at operation: Present in details activities in compliance with EMP of the subproject in the operation phase.	Every 6 month	District PUMA	CPMU

VIII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Public consultation and information disclosure of the subproject have to be implemented continuously from the design phase to the construction phase. It is to collect community ideas/ as well as encourage local people' participation in preparing and implementing the subproject/EMP. Public consultation till the point of preparing IEE of the subproject.

8.1 Public consultation in the subproject preparation phase

8.1.1 Description of activities to date

Table 11: Public consultation description

Consultation method	Description of activities	
By dispatches and meeting with local officers	Date of correspondence	Kon Tum PPMU contact with local authorities by telephone to agree on public consultation.
	Dates of meetings (if requested)	23/4/2015
	Minutes of meeting attached (yes/ no)	Yes
Public meeting	Organization date	Afternoon 23/5/2015
	Organization location	Dak Rve town The People's Committee
	Invitees	Beneficiaries, headers of villages and representative of town local authorities.
	Invitation method	Per the public media of the commune (header of villages announce every HH). The Women Association also invites women to attend the meetings.
	Meeting schedule attached (yes/ no)	Yes
	Minutes of meeting attached (yes/ no)	Yes
	Number of participants	53 people (8% was women)

8.1.2 Outcomes of the public consultation to date

All ideas/concerns from local people during the public consultation were reported by SPC to PPMU and also integrated into the IEE as stable in table 4 of IEE. See summary of the main ideas/concerns as table below.

Table 12: Results of public consultation

Ideas/concerns from local people	How the ideas to be addressed
	All ideas from local people were integrated into IEE and some main points are summarized as following
Inappropriate design to users	SPC reported to PPMU Kon Tum about concerns of local people and integrated the ideas into the IEE. table 4 of the IEE.
Existing road damage due to the subproject construction	<ul style="list-style-type: none"> - Weigh limitation of trucks, which maximum capacity is less than 10 tons. - Contractors must recover damaged roads as their original status
Abundant spoil/solid wastes from constructional activities (if any) should be utilized by local people	<ul style="list-style-type: none"> - Contractors have to notify abundant solid waste to local people if it is available.
Original environment/landscape recovery	Contractors have to recover environment at sites e.g <ul style="list-style-type: none"> - Inappropriate landfills of the subprojects; - Mines, especially soil mines; - Temporary land occupation around sites and on roads, - Check survival of trees and plant complementarily if any
Bad quality of the proposed works	<ul style="list-style-type: none"> - Local people agree to take part in community monitoring team set up by PPMU and local authorities;
Start as soon as possible	CPMU, PPMU is speeding up the project

8.2 Consultation in future

Table 13: Expected public consultation activities

Activities	Participants	Expected results	Schedule	Cost
Community meeting before construction commence	Kon Tum PPMU, CC, CSC, representative of local authorities and local people.	<ul style="list-style-type: none"> - Announce construction items and construction plan. - Agree on details of mitigation measures (especially water off schedule). 	1 week before construction commence.	Included in EMP budget.
Periodic meeting	CC, CSC and representative of local authorities, organizations and local people.	<ul style="list-style-type: none"> - Periodically monitor mitigation measures application, and outstanding issues; - Propose mitigation measures and agree on implementation. 	Every 1 month from the construction commence.	Included in the contracts

8.3 EMP disclosure

- After adopted, Kon Tum PPMU is responsible for posting IEE summary at Dak Rve town People's Committee.
- IEE will be posted on website of DONRE of Kon Tum and ADB Web.

IX. GRIEVANCE REDRESS MECHANISM

9.1 Purpose of the mechanism

During the deployment of the subproject, local people are disseminated environmental protection activities such as EMP. Negative impacts on the environment may occur during the construction and operational phases. Any comments/ suggestions of local people will be solved quickly, transparently and protected by law, particularly for affected people by the subproject. Complaint handling mechanism was classified by level and responsibilities of involved parties.

9.2 Grievance redress mechanism

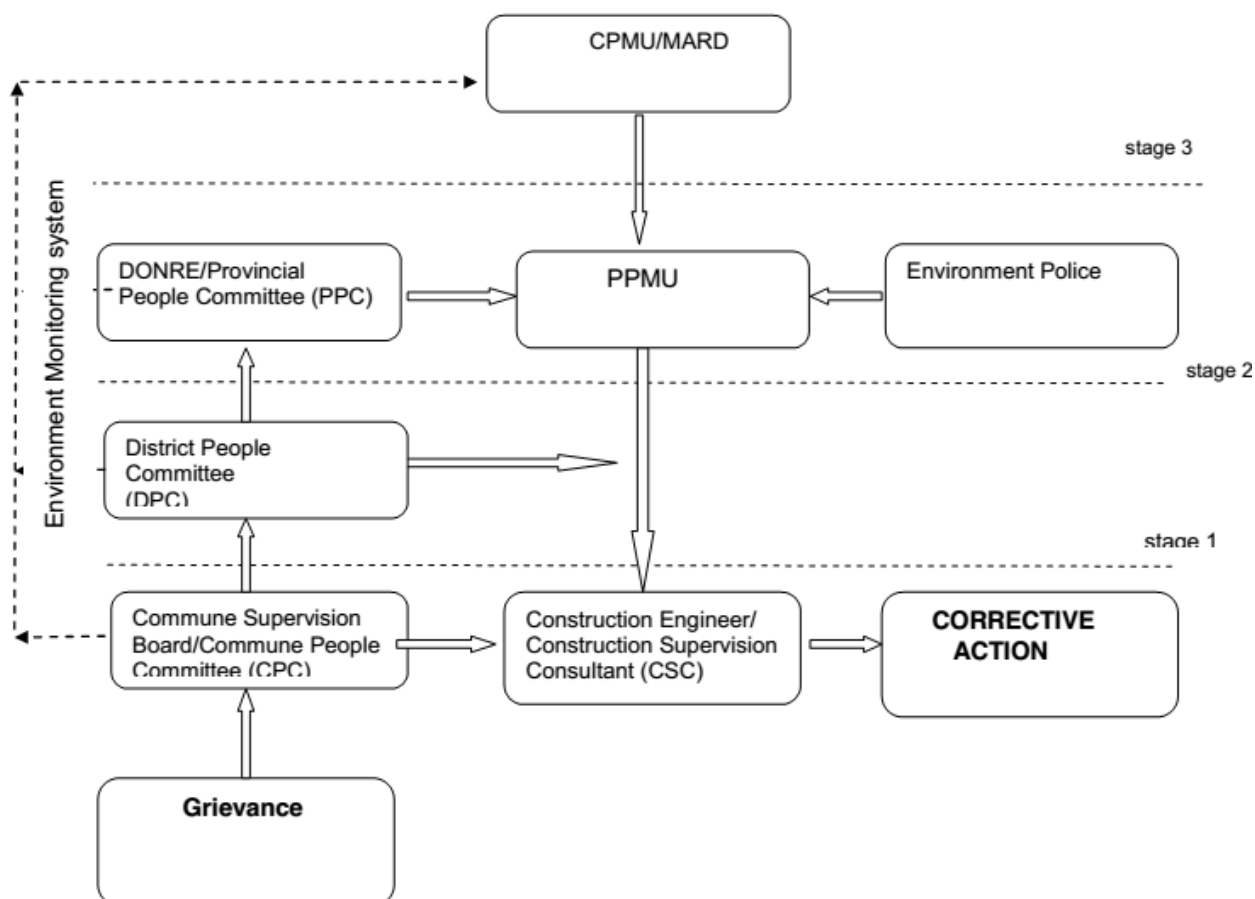
Per the environmental management frame, there are 03 steps to redress complaint as below:

Stage 1: If a household has any complaint he/she can submit a complaint to the CPC-community monitoring board. CPC will work with CSC and CC to solve complaints.

Stage 2: If the complaint is not resolved, the complainant will submit an application to the Kon Ray DPC. Kon Ray DPC to resolve the complaint.

Stage 3: If more than 15 days but no response from Kon Ray DPC, the complainant may submit a complaint to the Kon Tum PPC (through Kon Tum DONRE). Kon Tum PPC will require Kon Ray DPC to solve the complaint. In case the complaint is still not resolved, Kon Tum PPC will require environmental police to investigate and requested stakeholders to resolve the complaint. See the mechanism in figure 1 below:

Figure 1: Grievance redresses mechanism



X. CONCLUSION, COMMITMENT AND RECOMMENDATION

10.1 Conclusion

The results of environmental screening and environmental impact assessment show that the subproject may cause some environmental impacts. But the impact is insignificant. However, the appropriate mitigation measures have also proposed to manage the negative impacts and maximize the benefit of the subproject. The responsibility of implementation, monitoring of the stakeholders have also identified to ensure environmental compliance.

10.2 Commitment

PPMU of the subproject repairing and upgrading Dak Dam irrigation system and rural infrastructure in Kon Vang, Kon Ray district, Kon Tum province commit:

- Implement requirements of environmental safety as stated in IEE via information dissemination, integrating environmental safety as stated in this IEE in bidding documents, in construction contracts and in the CSC contracts; mobilize human resources and monitor internally the IEE compliance.
- Report environmental safety implementation to DONRE and CPMU periodically as specified in the IEE.
- Compensate and resolve environmental pollution if there are any problem during operation of the sub-project.
- Handle complaints if any.

10.3 Recommendations

Base on the IEE report, Kon Tum PPMU recommends:

- No further environmental assessment is needed because the impacts on environment is insignificant.
- Let the subproject to be constructed soon, Kon Tum PPMU suggests Vietnamese agencies and ADB approve this IEE report promptly.

XI. ANNEX

Annex 1: Public consultation images and at the subproject site





Some images on the current subproject site

Annex 2: Minutes of public consultation

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM Độc lập – Tự do – Hạnh phúc

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Dự án: “Phát triển cơ sở hạ tầng nông thôn phục vụ sản xuất cho các tỉnh Tây Nguyên”

Tiểu dự án: “Sửa chữa nâng cấp hệ thống thủy lợi Đăk Đam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang”

Hôm nay, ngày 23 tháng 4 năm 2015, tại UBND Thị trấn Đăk Rve - huyện Kon Rẫy - tỉnh Kon Tum

I. THÀNH PHẦN THAM DỰ:

1. Đại diện Ban QLDATEW (CPMU):

Ông: Nguyễn Đức Anh

- Chức vụ: Cán bộ dự án

Bà: Hoàng Thị Vân

- Chức vụ: Cán bộ CSAT

2. Đại diện Ban QLDA tỉnh (PPMU):

Ông (bà): Lê Văn Lễ..... - Chức vụ: PGD.....

Ông (bà): Lê Văn Hùng..... - Chức vụ: CB. CSAT.....

Ông (bà):..... - Chức vụ:.....

3. Đại diện công ty TNHH Tư vấn Đầu tư và Bảo vệ Môi trường EPC:

Ông (bà): Nguyễn Nam Sơn

- Chức vụ: Trưởng Đoàn Tư Vấn CSAT

Ông (bà):..... - Chức vụ:.....

Ông (bà):..... - Chức vụ:.....

Ông (bà):..... - Chức vụ:.....

4. Đại diện UBND thị trấn Đăk Rve

Ông (bà): Đinh Thị Sương..... - Chức vụ: PCT. UBND.....

Ông (bà): Mông Hồng Sơn..... - Chức vụ: PCT. HĐND.....

Ông (bà): Y. H. Lầu..... - Chức vụ: CT. T. T. Q.....

3.2. Vấn đề về môi trường

- Tiếp hai, trong quá trình thi cũng tiếp tục phát hiện các vật thể lạ như bình nhôm, chốt thép cũ, vỏ đồ ăn thừa... Tiếp theo, khi đang thực hiện kỹ thuật khai các bồn chứa ngầm dưới tầng hầm tầng 2 thì lại phát hiện các bình phẩy ngầm khác, cũng là an toàn một trường.

3.3. Vấn đề về dân tộc thiểu số

Trong khu vực TDA có rất nhiều Di tích DTTS
có một khối lượng rất lớn như hiện nay cũng có
phần thủng nát, trong quá trình thi công TDA
khu vực này cũng nên chú ý đến việc xây dựng
ngôi nhà tạm như hiện nay cũng phần hợp

3.2. Vấn đề về môi trường

- Tên họ, trong quá trình thi công tập để phát triển các vận động của mình, không như vậy, một thời gian, và đó là một điều đáng kể, khi hàng triệu hàng triệu người các bên liên quan đến việc này, tập để thực hiện tốt các vận động của mình, thời gian của một người.

3.3. Vấn đề về dân tộc thiểu số

Trong khu vực TDA có rất nhiều ô nhiễm do từ DTS
có một khối có các chất hóa học cũng có thể
phát thải ra môi trường. Trong quá trình khai thác TDA
tên là chất gây nên các hiện tượng ô nhiễm môi trường
nguyên nhân của ô nhiễm cũng rất phức tạp.

3.

5. Các ý kiến chung khác

1. Các hộ đề nghị được giám sát chất lượng công trình.
2. Một số hộ dân đề nghị được gặp Tiến đề "Đào tạo" của
- điều gì liên quan.
3. 100% các hộ đồng ý thực hiện dự án và sẵn sàng
- đi ăn đêm phục vụ hoàn thành.

Biên bản kết thúc vào lúc 16 giờ cùng ngày, đã đọc lại cho mọi người có mặt cùng nghe và thống nhất ký tên.

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đại diện CPMU

Đại diện PPMU

Đại diện các hộ

Vân

Hoàng Thị Vân

Đại diện UBND Thị trấn Đắk Rve



Đinh Thị Sương

Hộ Võ Văn Hưng

Đại diện Tư vấn



Nguyễn Nam Sơn

DANH SÁCH THAM GIA CUỘC HỌP

(Kèm theo biên bản tham vấn ngày tháng năm 2015)

STT	Họ và tên	Tuổi	Dân tộc	Giới tính		Ký tên
				Nam	Nữ	
1.	Lưu Đức	74	Mường	✓		
2.	Lê Thị Trang	37	Kinh		✓	
3.	Lê Thị Huệ	37	Kinh		✓	
4.	Bà Thị Lan	42	Kinh		✓	
5.	Nguyễn Thị Nhụ	36	Kinh		✓	
6.	Đặng Thị Nhung	62	Kinh		✓	
7.	Hà Thị Khanh	58	Kinh		✓	
8.	Nguyễn Thị Phúc	1960	Kinh		✓	
9.	Đinh Thị Thuận	30	Bamng		✓	
10.	Y Tiến	26	Tơ Lông			
11.	Nguyễn Thị Lan	58	Kinh		✓	
12.	Nguyễn Thị Sơn	53	Kinh		✓	
13.	Đỗ Thị Lan	48	Kinh		✓	
14.	Y Nô	41	Sơ Ra		✓	
15.	Luyện	37	Sơ Ra	✓		
16.	AAN	27	Sơ Ra	✓		
17.	Y H. Y - Oát	27	Tơ Lông		✓	
18.	Y Dôm	24	Tơ Lông		✓	
19.	Y Ngách	25	Tơ Lông		✓	
20.	Y Gô L	30	Tơ Lông		✓	
21.	Y Thái	35	Tơ Lông		✓	
22.	Y Tuấn	21	Ka Dong		✓	
23.	Y Leo	29	Sơ Ra		✓	
24.	Y Sơn	29	Sơ Ra		✓	
25.	Bùi Thị Gai	37	Kinh		✓	
26.	Trần Thị Phương	28	"		✓	
27.	Lê Thị Liễu	34	"		✓	
28.	Lê Thị Kim Anh	30	"		✓	
29.	Y Lì N	45	Tơ Lông		✓	
30.	Y Vích	43	Tơ Lông		✓	
31.	Y K N	43	Tơ Lông		✓	

STT	Họ và tên	Tuổi	Dân tộc	Giới tính		Ký tên
				Nam	Nữ	
32.	Y Kam	36			✓	
33.	Le Binh	50	Kinh	✓		
34.	Đỗ Thị Linh				✓	
35.	Đinh Thị Hồng	30.	Kinh		✓	Thơng
36.	Đinh Thị Khuy	31	Kinh		✓	Khuy
37.	Đặng T. Thủy	56.	Kinh		✓	Thủy
38.	Ngô Thị Huệ	55	Kinh		✓	Huệ
39.	Đỗ Thị Linh	54	Kinh		✓	
40.	Đỗ Thị Tiên	40	Kinh		✓	
41.	Nguyễn Thị Mai	42	Kinh		✓	
42.	Nguyễn T. Phụng	43	Kinh		✓	
43.	Đoàn Văn Thuận	59	Kinh	✓		
44.	Đoàn Thị Mến	48	Kinh		✓	
45.	Dương Thị Lucy	52	Kinh		✓	
46.	Nguyễn Thị Lát	49	Kinh		✓	
47.	Nguyễn Thị Thanh	50	Kinh		✓	
48.	Đinh Thị Toàn	50	Kinh		✓	
49.	Trần Thị Hiền	49	Kinh		✓	
50.	Phạm Thị Sầu	42	Kinh		✓	
51.	Phạm Ngọc Chi	53	Kinh	✓		
52.	Trần Khôi	55	Kinh	✓		
53.	Văn Cường	58	Kinh	✓		
54.						
55.						
56.						
57.						
58.						
59.						
60.						

Annex 3: Minutes and diagram of mines and disposal yards**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM****Độc Lập - Tự Do - Hạnh Phúc**

.....&&&.....

BIÊN BẢN

**“ Về việc xác định vị trí mỏ vật liệu sử dụng cho công trình: Tiểu dự án:
Sửa chữa nâng cấp hệ thống thủy lợi Đăk Đam và hạ tầng nông thôn phục vụ
sản xuất khu vực Kon Vang”**

Căn cứ hợp đồng tư vấn: HD-TV số 03 ngày 10-03-2014 giữa Ban quản lý dự án Phát triển cơ sở hạ tầng nông thôn phục vụ sản xuất cho các tỉnh Tây Nguyên tỉnh Kon Tum với Liên danh Công ty cổ phần tư vấn xây dựng Nông nghiệp Nông thôn Kon Tum Công ty cổ phần tư vấn xây dựng giao thông Kon Tum. Căn cứ vào điều kiện tự nhiên của khu vực xây dựng công trình.

Hôm nay: ngày 26 tháng 04 năm 2014 tại công trình: Tiểu dự án: Sửa chữa nâng cấp hệ thống thủy lợi Đăk Đam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang chúng tôi gồm có:

- Đại diện UBND:** *Thị Thân Đăk Rô Ve, huyện Kon Rẫy, KT*
Ông: *Nguyễn Xuân Biên* Chức vụ: *phó chủ tịch*
Ông: *Thái Việt Cường* Chức vụ: *CĐ Địa chính - Xây dựng*
- Đại diện nhà thầu khảo sát: Công ty CP TVXD giao thông Kon Tum**
Ông: *Nguyễn Quốc Yên* Chức vụ: *phó giám đốc*
Ông: *Đoàn Văn Đức* Chức vụ: *trưởng KS*
- Đại diện chủ đất:**
Ông: *A Lanh* Bà *Phan Công phú: thôn 5 TT Đăk Rô Ve*
Địa chỉ: *Thôn 7 thị trấn Đăk Rô Ve, huyện Kon Rẫy, tỉnh Kon Tum*

* Nội dung công việc:

Sau khi đi kiểm tra tình hình thực tế chúng tôi thống nhất nội dung sau:

- Vật liệu xây dựng được lấy tại : *Km 2 + 209,71 Bờ phải tuyến chính, các trục tuyến 3 m: Km 0 + 875,60 trái tuyến nhánh 1, 3*

Trong quá trình thi công, Chủ đầu tư chỉ đạo nhà thầu xây lắp lấy vật liệu xây dựng đúng vị trí đã được xác định, phải đảm bảo vệ sinh môi trường cho khu vực.

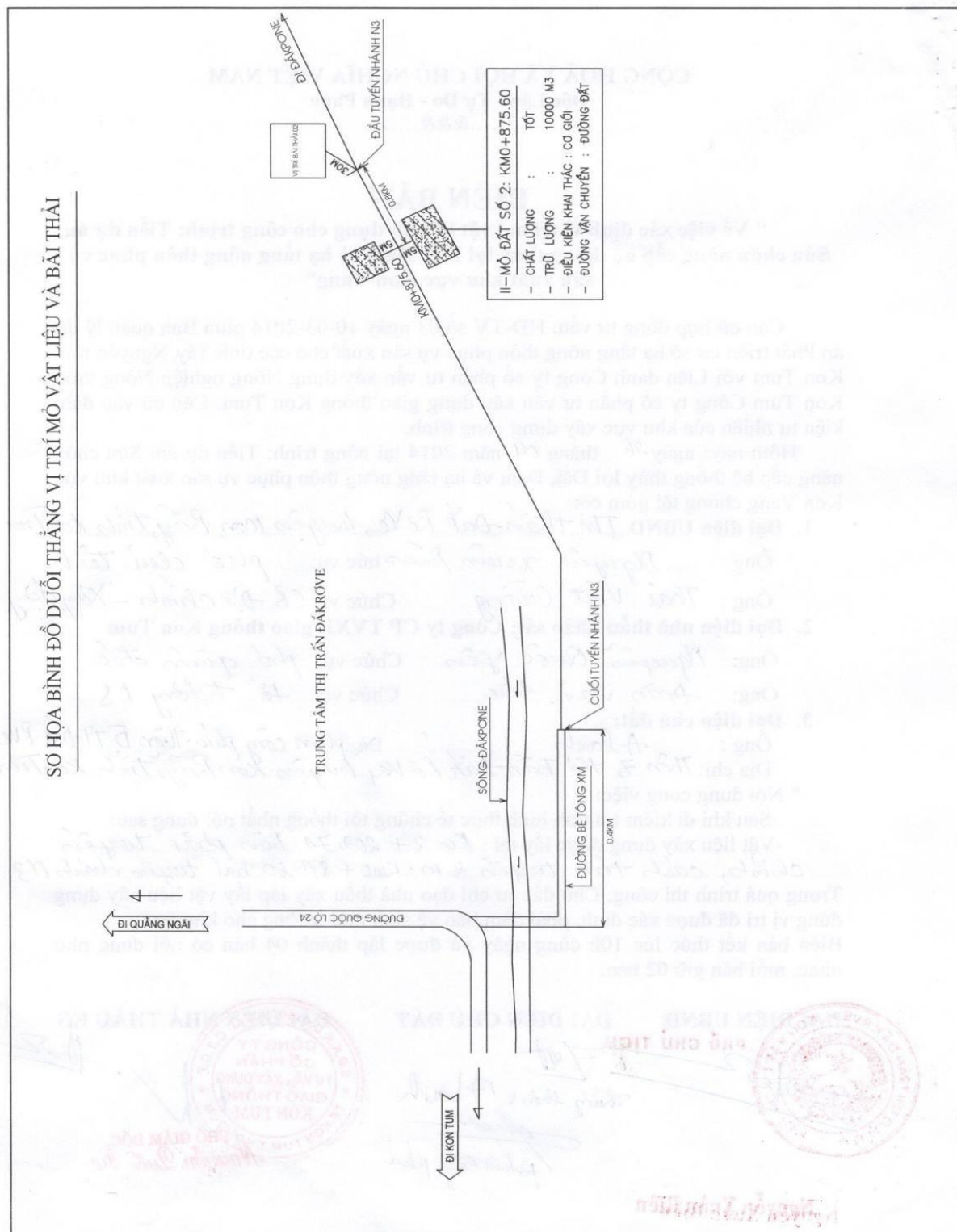
Biên bản kết thúc lúc 10h cùng ngày và được lập thành 04 bản có nội dung như nhau, mỗi bên giữ 02 bản.

**ĐẠI DIỆN UBND***Nguyễn Xuân Biên***ĐẠI DIỆN CHỦ ĐẤT**

Thư ký: A Lanh
Phan Công phú

**ĐẠI DIỆN NHÀ THẦU KS**

PHÓ GIÁM ĐỐC
Nguyễn Quốc Yên



CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc Lập - Tự Do - Hạnh Phúc

.....&&&.....

BIÊN BẢN

“ Về việc xác định vị trí bãi thải vật liệu tại công trình: Tiểu dự án: Sửa chữa nâng cấp hệ thống thủy lợi Đắk Dam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang”

Căn cứ hợp đồng tư vấn: HD-TV số 03 ngày 10-03-2014 giữa Ban quản lý dự án Phát triển cơ sở hạ tầng nông thôn phục vụ sản xuất cho các tỉnh Tây Nguyên tỉnh Kon Tum với Liên danh Công ty cổ phần tư vấn xây dựng Nông nghiệp Nông thôn Kon Tum Công ty cổ phần tư vấn xây dựng giao thông Kon Tum. Căn cứ vào điều kiện tự nhiên của khu vực xây dựng công trình.

Hôm nay: ngày 26 tháng 04 năm 2014 tại công trình: Tiểu dự án: Sửa chữa nâng cấp hệ thống thủy lợi Đắk Dam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang chúng tôi gồm có:

1. Đại diện UBND Thị trấn Đắk Rồ Ve, huyện Kon Rẫy, tỉnh Kon Tum

Ông: Nguyễn Xuân Biên Chức vụ: phó chủ tịch

Ông: Thái Việt Cường Chức vụ: CB Điều hành Xây dựng

2. Đại diện nhà thầu khảo sát: Công ty CP TVXD giao thông Kon Tum

Ông: Nguyễn Quốc Yên Chức vụ: p. giám đốc

Ông: Đoàn Văn Đức Chức vụ: tổ trưởng KS

3. Đại diện chủ đất:

Ông: Võ Duyệt Hoàng Bà Đoàn Văn Thưởng Thôn 3 TT-Đắk Rồ Ve

Địa chỉ: Thôn 8, thị trấn Đắk Rồ Ve, huyện Kon Rẫy, tỉnh Kon Tum

* Nội dung công việc:

Sau khi đi kiểm tra tình hình thực tế chúng tôi thống nhất nội dung sau:

- Bãi thải Vật liệu xây dựng được đổ tại

1- Km 2 + 160,03, Bùn trái tuyến chính, cách trục tuyến 20m

2- Bùn trái tuyến nhánh 1/3 (chứa 6500 m³, diện tích 2.600 m²)

Trong quá trình thi công, Chủ đầu tư chỉ đạo nhà thầu xây lắp đổ vật liệu xây dựng

đúng vị trí đã được xác nhận, phải đảm bảo vệ sinh môi trường cho khu vực.

Biên bản kết thúc lúc 10h cùng ngày và được lập thành 04 bản có nội dung như

nhau, mỗi bên giữ 02 bản.



ĐẠI DIỆN UBND

PHÓ CHỦ TỊCH

Nguyễn Xuân Biên

ĐẠI DIỆN CHỦ ĐẤT

Hoàng
Võ Duyệt Hoàng

Đoàn Văn Thưởng (Biên bản)



ĐẠI DIỆN NHÀ THẦU KS

PHÓ GIÁM ĐỐC
Nguyễn Quốc Yên

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc Lập - Tự Do - Hạnh Phúc

.....&&&.....

BIÊN BẢN

“ Về việc xác định vị trí bãi thải vật liệu tại công trình: Tiểu dự án: Sửa chữa nâng cấp hệ thống thủy lợi Đắc Đam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang”

Căn cứ hợp đồng tư vấn: HĐ-TV số 03 ngày 10-03-2014 giữa Ban quản lý dự án Phát triển cơ sở hạ tầng nông thôn phục vụ sản xuất cho các tỉnh Tây Nguyên tỉnh Kon Tum với Liên danh Công ty cổ phần tư vấn xây dựng Nông nghiệp Nông thôn Kon Tum Công ty cổ phần tư vấn xây dựng giao thông Kon Tum. Căn cứ vào điều kiện tự nhiên của khu vực xây dựng công trình.

Hôm nay: ngày 26 tháng 04 năm 2014 tại công trình: Tiểu dự án: Sửa chữa nâng cấp hệ thống thủy lợi Đắc Đam và hạ tầng nông thôn phục vụ sản xuất khu vực Kon Vang chúng tôi gồm có:

1. Đại diện UBND Tỉnh: Trần Văn Rô Ve, huyện Kon Rẫy, tỉnh Kon Tum.

Ông: Nguyễn Xuân Biên Chức vụ: phó chủ tịch

Ông: Thái Việt Cường Chức vụ: CB. Địa chính - Xây dựng

2. Đại diện nhà thầu khảo sát: Công ty CP TVXD giao thông Kon Tum

Ông: Nguyễn Quốc Yên Chức vụ: p. giám đốc

Ông: Đoàn Văn Đức Chức vụ: tổ trưởng KS

3. Đại diện chủ đất:

Ông: Võ Duy Hoàng Bà Đoàn Văn Thưởng thôn 3 TT Đắc Rô Ve

Địa chỉ: thôn 8, thị trấn Đắc Rô Ve, huyện Kon Rẫy, tỉnh Kon Tum

* Nội dung công việc:

Sau khi đi kiểm tra tình hình thực tế chúng tôi thống nhất nội dung sau:

- Bãi thải Vật liệu xây dựng được đồ tại
2- Đầu tuyến nhánh 03 (chứa 3.000 m³ S = 1.500 m²)
1- Km 2 + 166,03, Bên trái tuyến chính, cách trục tuyến 20 m ...

Trong quá trình thi công, Chủ đầu tư chỉ đạo nhà thầu xây lắp đồ vật liệu xây dựng đúng vị trí đã được xác nhận, phải đảm bảo vệ sinh môi trường cho khu vực.

Biên bản kết thúc lúc 10h cùng ngày và được lập thành 04 bản có nội dung như nhau, mỗi bên giữ 02 bản.

ĐẠI DIỆN UBND

ĐẠI DIỆN CHỦ ĐẤT

ĐẠI DIỆN NHÀ THẦU KS



Nguyễn Xuân Biên

PHÓ CHỦ TỊCH

Hoàng
Võ Duy Hoàng

Đ1138

Đoàn Văn Đức
(Bí thư)PHÓ GIÁM ĐỐC
Nguyễn Quốc Yên

Annex 4: Results of monitoring environmental parameters**TEST REPORT**

1. *Name of sample*: ambient air.
2. *Position samples-Mark of sample*:
+ Center of Dak Rve town, Kon Ray district - QT/K_{51-QT} (K₁₄)
Coordinates (VN2000): X = 1604406; Y = 0580052.
3. *Quantity*: 02.
4. *Samples held*: Kon Tum Environmental Monitoring Center
5. *Receiving date*: 26/9/2014; *On test*: 27/9-01/10/2014.
6. *Test results*:

Test results:					
No	Characteristic	Test methods	Units	Test results	
					QT/K _{51-QT} (K ₁₄)
I	Micro climates, vibration):				
1	Temperature	QCVN 46:2012/BTNMT	°C		28,5
2	Humidity	QCVN 46:2012/BTNMT	%		69
3	Vibration0: (*)	TCVN 7878-1:2010			
	+ L _{Aeq}		dB		61,2
	+ L _{Amax}		dB		74
II					
1	(TSP) (*)	TCVN 5067:1995	µg/m ³		106
2	CO	HD.02.32/QTMTKT	µg/m ³		931
3	SO ₂	TCVN 5971:1995	µg/m ³		77
4	NO ₂	TCVN 6137:2009	µg/m ³		40
5	O ₃	TQKT – BYT	µg/m ³		7,8
6	Pb	52TCN 354-89	µg/m ³		KPH
7	HC	TQKT – BYT	µg/m ³		216

(Source: PPMU KonTum)

TEST REPORT

1. *Name of sample:* Surface water quality (QTMT tỉnh Kon Tum năm 2014 – Điểm 4).

2. *Samples Location:*

- Dak Pone river behind the Dak Pone hydropower plant - QT/M_{52-QT}(S_{DPn}).
- Coordinates (VN 2000): X = 1609620; Y = 0586890

3. *Sample Quantity:* 02 mẫu.

4. *Specific status of sample:* Both water samples are clear, colorless, odorless.

5. *Samples held:* Kon Tum Environmental Monitoring Center

6. *Receiving date:* 05/11/2014 - *On test:* 05-12/11/2014

7. *Test results:*

No.	Characteristics	Test methods	Units	Test results		Notes
					QT/M _{52-QT} (S _{DPn})	
1	Temperature (°)	TCVN 4557:1988	°C		25,2	
2	pH(°)	TCVN 6492:2011	-		6,41	
3	Electrical conductivity (°)	SMEWW 2510	µS/cm		52,7	
4	DO(°)	TCVN 7325:2004	mg/L		6,00	
5	COD(°)	SMEWW 5220 C	mg/L		10,4	
6	BOD ₅ ^{20(°)}	TCVN 6001-1:2008	mg/L		6,92	
7	NH ₄ ⁺ -N(°)	TCVN 6179-1:1996	mg/L		0,15	
8	NO ₂ ⁻ -N(°)	TCVN 6178:1996	mg/L		0,0036	
9	NO ₃ ⁻ -N(°)	TCVN 7323-1:2004	mg/L		0,24	
10	SO ₄ ²⁻ (°)	SMEWW 4500-SO ₄ ²⁻ E	mg/L		5,49	
11	PO ₄ ³⁻ -P(°)	TCVN 6202:2008	mg/L		0,057	
12	Cl ⁻ (°)	TCVN 6194:1996	mg/L		0,64	
13	N total(°)	TCVN 6638:2000	mg/L		3,92	
14	P total(°)	SMEWW 4500-P E	mg/L		0,62	
15	Fe total(°)	TCVN 6177:1996	mg/L		0,41	
16	Cu	TCVN 6193:1996	mg/L		KPH	HĐP
17	Zn	TCVN 6193:1996	mg/L		KPH	HĐP
18	Cd	TCVN 6193:1996	mg/L		KPH	HĐP
19	Pb	TCVN 6193:1996	mg/L		KPH	HĐP
20	As	TCVN 6626:2000	mg/L		KPH	HĐP
21	Hg	TCVN 7877:2008	mg/L		KPH	HĐP
22	Coliform	TCVN 6187-2:1996	MPN/10		2,4x10 ²	HĐP

(Source: PMMU KonTum)

Annex 5: Environmental requirement into bidding document

No	Impacts	Objectives	Mitigation measures	Location	Time
1	Landslide, soil erosion and sedimentation	It controls soil erosion and sedimentation risk	<ul style="list-style-type: none"> - Construction works need to be scheduled to avoid rainy season; - Construct section by section to complete each section if possible - Covering material storage areas during rainy times - Stabilizing all cut slopes, embankments, and other erosion-prone working areas while works are going on. - Re-plant vegetation cover in high slope sections of the road as soon as possible after excavated works 	Whole alignment	During the construction phase
2	Surface water source can be contaminated	It is to minimize water source contamination	<ul style="list-style-type: none"> - Discarded lubricant, other chemicals have to be kept in dry covered area or collected, transported and treated according to the Circular No. 36/2015-BTNMT dated on 01/09/2015 of MONRE; - Constructional wastes need to be transported by adequate manners to the three agreed disposal areas; - Provide dustbins and mobility septic tanks at work to manage wastewater and domestic waste from worker camps site; - Disposal of solid wastes into canals, stream, other watercourses, agricultural field shall be prohibited - The placement of washing instruments/vehicles next to the water bodies, existing river, streams and canals will not be allowed such as: Dak Po Ne, Dak Dam streams and other 6 small streams. - Cover material storage areas when raining is needed. Temporary storage of construction and domestic waste on the sites will be no longer than 24 hours 	(i) On Dak Dam steam and along roads of villages 3, 5, 6, 7, 8 (ii) at the interchange between the road of the sub project and the stream and its branches (iii) worker camps	During the construction phase

No	Impacts	Objectives	Mitigation measures	Location	Time
3	Noise/vibration	It ensures noise/vibration at standard QCVN 26,27/2010/BTNMT	<ul style="list-style-type: none"> - Constructional machines and equipment need to meet standards of exhaust, noise, and vibration as regulated by the Government. Contractors needs to submit the documents proving that all constructional vehicles, equipment, and machines are checked and meet requirements noise and vibration generation of the current Vietnam standards ; - All noise and vibration generation activities shall be restricted at rest time of local people (12-13h and 20h to 6h) on road items - Working schedule needs to be publicly announced to local people. 	Along canal N2 and upgraded road	During the construction phase
4	Air pollution	It ensures air pollution complied with QCVN:05-2009/BTNMT	<ul style="list-style-type: none"> - Watering to minimize dust generation needs to be implemented at residential areas such as villages 3, 5, 6, 7, 8. The watering activities have been done at least once per day during the rainy season and twice a day during the dry season in the working areas ; - All trucks must be covered when transporting pollution materials; - Equipment/vehicles have to be verified and licensed; - a washing station near constructional site or villages 3, 5, 6, 7, 8 to wash all vehicles before going out construction sites. - All material/waste storages shall be located away from any households and sensitive areas 	Whole alignment close to residential areas	During the construction phase
5	Soil contamination	It is to minimize soil contamination	<ul style="list-style-type: none"> - No construction materials and/or wastes fall into agricultural land in the subproject areas; - Discarded lubricant, chemicals must be kept in dry area or covered if raining; - Toxic waste, if any, need to be collected, transported and treated according to Circular No. 36/2015-BTNMT dated on 	Whole alignment	During the construction phase

No	Impacts	Objectives	Mitigation measures	Location	Time
			<p>01/09/2015 of MONRE</p> <ul style="list-style-type: none"> - Regularly collect solid wastes and transport to disposal areas have agreed with local authorities/local people as i) first area is about 20m on left side of main road at km2+160 and (ii) the second area is at beginning of canal N3. Storage capacity of these areas is about 6.500m³ with 2600m², (iii) disposal area for foundation digging of head work at 1 km of downstream of Dak Dam weir's at right hand side; - Provide dustbins and mobility septic tanks in all construction sites and worker camps; - Waste water from worker camps needs to be collected and treated before discarded to environment 		
6	Local flooding	Ensures that the construction does not interrupt farming activities	<ul style="list-style-type: none"> - No construction materials and/or wastes fall into the constructed canal and other canals such as Dak Po Ne, Dak Dam streams and other 6 small streams - Setting up appropriate construction schedule at the site to avoid rainy season, especially for excavation activities - Placement of washing instruments/vehicles next to the rivers, streams, existing canals will not allowed such as Dak Po Ne, Dak Dam streams and other 6 small streams 	Along both components	During the construction phase
7	Traffic accident may increase and difficulty for usual life of local people	It ensures traffic safety and minimize life disturbance of local people	<ul style="list-style-type: none"> - Install signals at site to control speed of vehicles or signal of work under construction, especially at the intersections; - Install lamps at night at construction sites where are near residential areas such as villages ; 3, 5, 6, 7, 8 - Inform the community about construction schedule through informal public consultation or any local people meetings and notice board 	Upgraded road	During the construction phase

No	Impacts	Objectives	Mitigation measures	Location	Time
8	Impact on terrestrial ecology	to minimize impacts on terrestrial ecology	<ul style="list-style-type: none"> - Cut trees outside of right of way by workers will be banned - Re-plant vegetable cover section by section after construction work completed 	Upgraded road	During the construction phase
9	Solid wastes	to minimize impacts to environment by solid wastes	<ul style="list-style-type: none"> - Abundant volume has to be monthly removed to sites agreed with local authorities as i) first area is on left side of main road at km2+160 and (ii) the second area is at beginning of canal N3; (iii) disposal area for foundation digging of head work at 1 km of downstream of Dak Dam weir's at right hand side. ; - Equip dustbins and mobility septic tanks to work sites ((it is proposed that there will be 4 dustbins and 2 mobility septic tanks provided at each construction site ; - Sign a contract to weekly collect solid waste at worker camp with a local agency - Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited; - Burning of construction and domestic wastes shall be prohibited 	Construction sites and worker camps	During the construction phase
10	Impacts to existing infrastructure	to minimize adverse impacts to existing infrastructures	<ul style="list-style-type: none"> - Work with existing infrastructure owners (electricity, water...) to identify locations of underground items if any; - Obtain an agreement with local authorities in using some certain transport routes to transport materials and constructional wastes. It is to control and minimize damages to existing transport infrastructure due to the subproject construction; - Load capacity of trucks do not exceed local bridge/road's (it is best of less than 5 ton/axis/truck); - All public facilities including transport infrastructure must be 	Road component	During the construction phase

No	Impacts	Objectives	Mitigation measures	Location	Time
			fully recovered as its original status after completing constructional works		
11	Disturbance to local people's life due to crowded workers	To minimize disturbances to local people's life due to workers	<ul style="list-style-type: none"> - A recruitment priority should be given to local workers; - Register provisional residence for workers staying at camps; - Contractor needs to regulate camp sanitation regulations; - Carry out HIV/AIDS prevention program and sex transmission infection 	Construction sites and camps	During the construction phase
12	Risks to health and safety to local people and workers	To ensure good health and safety to local people and workers	<ul style="list-style-type: none"> - Provide sufficient labor safety to workers such as shoes, helmets etc. And instruct workers how to use; - An early aid kit will be provided at each construction site to ensure patients can receive first aid timely before transporting them to medical station/hospital - Install power network at site in accordance with safety regulations of the state and ensure that power lines or outlets will be kept at dry and safe places; - Install warning signs at the electric receptacles; - Install information signs about the project, the labor regulations at site; - Install fences, warning signs at the intersection between the drains and roads; - Remain the light during the night time on all construction sites. - Timely repair damaged road surfaces and bridges; - Construct temporary drainage ditches to drain water at site, prevent waterlogging. 	Whole of the alignment	During construction phase

