

# Initial Environmental Examination

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August, 2015

## LOAN 3173-VIE: INTEGRATED RURAL DEVELOPMENT SECTOR PROJECT IN THE CENTRAL PROVINCES (Additional Financing)

Subproject: Lining the Beginning Section of Northern Main Canal (from k0+500 to k10+00) and Upgrading Management Road of Nha Trinh - Lam Cam Irrigation System, Ninh Thuan Province

## **CURRENCY EQUIVALENTS**

(as of 19 August 2014)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	\$0.000047
\$1.00	=	VND 21,246

## **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
EIAR	Environmental Impact Assessment Report
EMDF	Ethnic Minority Development Framework
EMP	Environmental Management Plan
DARD	Department of Agriculture and Rural Development
FPD	Forest Protection Department
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
IRDPCP	Integrated Rural Development Project in Central Provinces
LIC	Loan Implementation Consultant
MONRE	Ministry of Natural Resources and Environment
PC	People's Committee
PPC	Provincial Peoples Committee
PPMU	Provincial Project Management Unit
RF	Resettlement Framework
SIR	Subproject Investment Report
TPC	Town People's Committee
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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## 1. INTRODUCTION

1. Loan 2357(SF) for the Integrated Rural Development Sector Project in the Central Provinces (IRDSPCP) was approved by ADB on 15 October 2007. The total cost of the Project was estimated at \$168.2 million and is jointly financed by ADB and Agence Francaise de Developpement (AFD). The IRDSPCP focuses on upgrading and rehabilitating rural infrastructure (rural roads and irrigation systems, flood control, markets and other key infrastructure). To date, 129 subprojects have either been completed or are nearing completion. Review missions had determined that the quality of construction of subprojects was good. The executing agency (EA) has developed the expertise needed to effectively implement the project and significant benefits are already accruing.
2. At the request of the Government, the potential for additional financing was investigated during the Mid-Term Review in 2011 and two review missions in 2012. About 39 new subprojects were found eligible for consideration in the additional financing. The amount of \$70 million has been recommended and included in the country program for ADB Board consideration in 2013. The IRDSPCP -Additional Financing (the Project) aims to rehabilitate and upgrade deteriorated critical productive rural infrastructure in support of the Government of Viet Nam's new National Target Program for Rural Development (NRD).
3. In consultation with the relevant provincial government and field investigation by the CPMU, a total of 23-24 eligible subprojects were initially identified based on 7 screening criteria which are focused on social economic development, safeguards, integrated development model, feasibility and sustainability. The types of subprojects are as follows:
  - (i) Small & medium-sized dam and reservoir improvements e.g., spillways, head-works, reservoir walls, and leakage control;
  - (ii) Rehabilitation of primary and secondary irrigation canals and river bank stabilization. Wherever possible key strategic investments such as the lining of critical lengths of canal or the reinforcing of existing water control structures will be chosen; and
  - (iii) Rehabilitation of commune to district, and inter-commune roads to improve linkages between higher level alignments (provincial and national routes) and lower level commune to village and inter-village roads. In addressing key issues of sustainability, designs will take into account the increased intensity and frequency of climatic hazards anticipated to result from global climate change, the local geology and terrain, potential change in utilization patterns (type and volume of traffic), and the longer-term availability of recurrent expenditure for operations and maintenance (O&M).
4. As part of the IRDPC, LINING THE BEGINNING SECTION OF NORTHERN MAIN CANAL (FROM K0+500 TO K10+00) AND UPGRADING ITS MANAGEMENT ROAD OF NHA TRINH - LAM CAM IRRIGATION SYSTEM subproject will be implemented at Nhon Son commune - Ninh Son district, Do Vinh ward, Thanh Hai commune - Phan Rang city, Xuan Hai, Ho Hai – Ninh Son district, Ninh Thuan province.
5. This Initial Environmental Examination/Commitment on Environmental Protection (IEE/CEP) document has been prepared to meet the environmental safeguards requirements of the ADB<sup>1</sup> and GOV<sup>2</sup>. The IEE/CEP contains the following information:
  - (i) Section 2 contains a description of the subproject;

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<sup>1</sup> ADB Safeguard Policy Statement (2009)

<sup>2</sup> Law on Environment Protection (Revised) 2006; Decree 29/2011/ND-CP and Circular 26/2011/TT-BTNMT

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

*Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of NhaTrinh - Lam Cam irrigation system subproject, Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project*

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- (ii) Section 3 contains a description of environmental conditions in the vicinity of the subproject;
- (iii) Section 4 contains a describes potential environmental impacts of the subproject;
- (iv) Section 5 contains the environmental management plan including mitigation measures, monitoring system and cost estimation for Environmental Monitoring System (EMS) implementation;
- (v) Section 6 contains activities description on community consultation and subproject disclosure;
- (vi) Section 7 contains conclusion and recommendation including summarization of main impacts and typical mitigation measures in the subproject's implementation.

## 2. PROJECT DESCRIPTION

Table 1. General information of subproject

DATA ITEM	SUBPROJECT DATA		
<b>GENERAL INFORMATION</b>			
Subproject Name	Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province		
Subproject Type	Irrigation		
Executing Agency	People's Committee of Ninh Thuan Province		
Sub-project owner	Department of Agriculture and Rural Development, Ninh Thuan Province		
Sub-project Management Unit	PPMU of IRDPCP, Ninh Thuan Province		
Address of PPMU's office	No. 36 - 16 April road, Phan Rang – Thap Cham City, Ninh Thuan province		
Name and Title of Head of Project owner	Nguyen Hai Title : Director		
Telephone, fax and email details of Project owner	Tel:0683.834152 ; FAX : 0683.823730		
Name of Environmental Officer of PPMU	Tran Ba Luat		
Telephone, fax and email details of PPMU Environmental Officer	0915017367, tluat3320@gmail.com		
<b>SUBPROJECT DESCRIPTION</b>			
New project or rehabilitation project	Rehabilitation project The subproject includes some components as bellow <ul style="list-style-type: none"> <li>Lining northern main canal of Nha Trinh – Lam Cam irrigation system with a length of 9.5 km (from K0+500-K10);</li> <li>Constructing 41 and upgrading 48 of water inlets, outlets, culverts, aqueducts, spillways ect., on canal structures</li> <li>Upgrading the management road of northern main canal with a total length of 14.483 km;</li> </ul>		
Surface water or groundwater source	Surface water		
Determination of water source	Cai river, taking water from Nha Trinh - Lam Cam weir		
Is this water used for domestic purposes or not?	No. The canal was built for irrigation purpose but some local people use the water for their living activities.		
Length of canals	L= 9.5 km (from K0+500 to K10+00)		
Width and depth of canals	<b>Canal</b>	<b>Width (m)</b>	<b>Depth (m)</b>
	Northern main canal	6.0 - 6.5	1.8 - 2.0
Grade of traffic road ( <i>Technical Standard</i> )	Rural road at grade A in plain area (following Standard TCVN 4054-2005)		
Designed velocity (km/h)	10Km/h		
Length and width of road (km)	Upgrading of road with a length of 14.483 km; Width: B road-bed = 5 m =(3,5+2x0,75); B road-surface = 3.5m		
Road surface ( <i>paving asphalt, concrete, soil, etc.</i> )	Concrete		
Number and length of bridge	No		
Number and dimension of	Round culvert with a diameter of 30-60cm: 14 pieces; box culvert with a		



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Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA			
culvert	dimension of 30 -60cm: 07 pieces. Culverts are steel reinforced concrete;			
Length of flooding drainage works	Total length of longitudinal drainage culvert is 1588m; Total length of cross drainage culvert is 52.5m			
Width of land clearance area:	The width of designed road is from 5.0 to 7.5 m. However the proposed road will be located within the existing management road. Thus, width of clearance area is zero;			
Number of other road cutting the subproject road	26 other roads including 03 asphalt roads, 01 rail way, 22 concrete and earth roads;			
Length and width of access roads to construction sites	The material transportation roads to constructions sites include the National road No. 27 with a length of 12.4km, a width of 15m; the provincial road No.702 and 704 with a length of 10 km, a width of 5m; concrete district's roads with a total length of 24 km, commune's road with a length of 55 km and a width of 3.5-5m.			
<b>CONSTRUCTION ACTIVITIES<sup>3</sup></b>				
Commencement date (month/year)	The first of April 2016 (as expected)			
Completion date (month/year)	The 31 <sup>st</sup> of December 2016 (as expected)			
Number of workers	About 100 persons			
Necessary camps (Yes/No)	Yes, 01 main camp and 03 camps along the proposed canal and 03 camps along the management road			
Construction in rainy season (Yes/No)	No			
Concrete mixing plant	No concrete mixing plant, using mobilization concrete mixing plant			
Location and area of borrow area or description of material source	<p>Filled soil will be taken from Deo Cau borrow pit located at a distance of 5 km from the subproject site and approved by Local Authority Stone will be taken from the licensed quarry of Deo Cau, Ninh Son district. It is far from the subproject area about 5 Km;</p> <p>Sand will be taken from the licensed mine of Luong Cang, Nhon Son commune, Ninh Son district.</p> <p>Other material such as steel, cement will be taken from city of Phan Rang - Thap Cham located 10km from the subproject site.</p>			
Method on management and balance of excavated soil/surplus soil	<p>The quantity of excavated soil along the route of the canal will not great which is used for filling back the banks; Surplus soil is used for leveling the canal safety corridor;</p> <p>Cutting soil: 81,779m<sup>3</sup>; Filling soil: 62,633m<sup>3</sup>; Discarded soil: 16,355m<sup>3</sup>; About 27,000 m<sup>3</sup> of cutting soil will be reused to fill up the canal's banks and road and 40,500 m<sup>3</sup> of filling soil will be taken from Deo Cau borrow pit.</p>			
Type and approximate quantity of raw construction materials	<b>No.</b>	<b>Items</b>	<b>Unit</b>	<b>Quantity</b>
	1	Excavated stone	m <sup>3</sup>	3,476.200
	2	Excavated soil	m <sup>3</sup>	59,909.310
	3	Filled soil	m <sup>3</sup>	58,820.990
	4	Organic removal	m <sup>3</sup>	27,228.000
	5	Aggregate of red gravel (1st- type)	m <sup>3</sup>	12,966.000

<sup>3</sup>Source: Basic Design Explanation of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

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Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA			
	6	Reinforced concrete	m <sup>3</sup>	19,885.76
	7	Concrete	m <sup>3</sup>	2204.25
	8	Reinforced steel	ton	650.921
	9	Shaped steel	ton	13.121
Quantity of solid waste generated from construction: - Soil, sand, debris, etc - Domestic waste	Estimated soil and sludge volume: 30 m <sup>3</sup> /month Domestic waste: 0.5kg/person/day, in total: 100 x 0.5 kg x 30= 1,500kg/month			
Number and conditions construction vehicles and equipment	12 bulldozers; 10 excavators; 10 compactors; 10 jumping jack compactors; 36 tip trucks, 48 concrete mixing machines, 10 generators 10 water trucks, 42 vibrator cylinders, 14 plate vibrators. All vehicles and machines are in good conditions and have registration of periodical verification			
<b>OPERATION AND MAINTENANCE ACTIVITIES<sup>4</sup></b>				
Water discharge at the beginning section of the canal: (m <sup>3</sup> /s)	<b>Canal</b>		<b>Unit</b>	<b>Discharge (Q)</b>
	Northern main canal		m/s	10.45
Irrigation area (ha)	6000 ha			
Operation, management and maintenance Unit	Ninh Thuan Irrigation Work Exploitation Limited Company is responsible for operation, management and maintenance after the completion of the work			
Water treatment process	No. Water in Cai river has been used only for irrigation purpose without sign of water pollution. There has not been any water treatment system in the subproject area.			
Descriptions of periodical maintenance activities	<p><b>Annual maintenance:</b> Annual maintenance activities include greasing machines, replacing broken minor parts of machines such as penstocks; dredging sludge of canals, culverts, spillways; repairing banks of canals; removing rubbish in the canals, culverts, troughs, spillways ect; repairing minor breaks of canal slopes, culverts, spillways and treating extrusion joints, penetration through animal holes and nests of white ants.</p> <p>Annual average cost for Operation and Maintenance Activities estimated 3,250,000,000VND</p> <p><b>Periodic maintenance (every 7 years):</b> Periodic maintenance is conducted every seven years for canals. Estimated cost for periodic maintenance is 30% of the capital cost including repairing significantly damaged works. Detailed activities will be based on the Economic-Technical Report according to the government's regulations on investment management.</p>			
<b>RESETTLEMENT AND LAND ACQUISITION<sup>5</sup></b>				
Affected households	209 households			
Number of severely affected APs	There is no production land loss of >10% for any household.			
Number of APs that must relocate	No house/shop shall be relocated or rebuilt at new place.			

<sup>4</sup>Source: SIR of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province

<sup>5</sup>This data is obtained from Resettlement Plan of the subproject

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

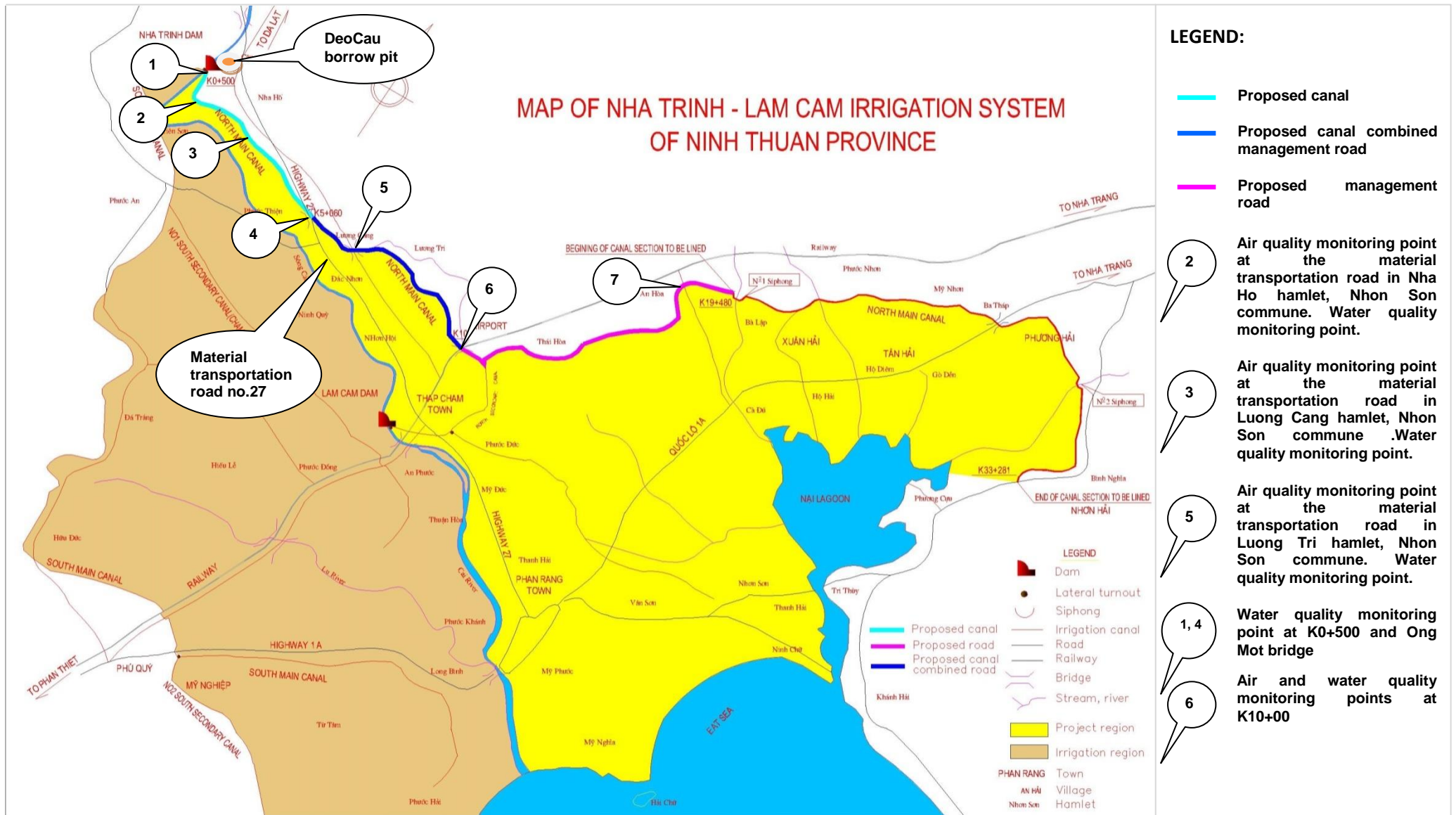
Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of NhaTrinh - Lam Cam irrigation system subproject, Ninh Thuan Province  
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DATA ITEM	SUBPROJECT DATA	
Total land area to be acquired (ha)	Temporary= 0m2	Permanent = 83,750m2
Agricultural land area to be acquired (ha)	Temporary= 0 m2	Permanent = 58,625m2
Forestry land area to be acquired (ha)	Temporary= 0 m2	Permanent = 0 m2
Aquacultural land to be acquired (ha)	Temporary= 0 m2	Permanent = 0 m2
Residential land to be acquired(ha)	Temporary= 0 m2	Permanent = 0 m2
Garden land to be acquired (ha)	Temporary= 0 m2	Permanent = 25,125m2
Other land to be acquired (ha)	Temporary= 0 m2	Permanent = 0 m2
Affected assets	None	None
<b><i>SUBPROJECT COST</i></b>		
<b>Total subproject cost (VND and \$USD)</b>	140,417,441,000VND/ 6,609,124 USD	

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

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**Figure1: Map of Subproject and Surrounding Area**



### 3. DESCRIPTION OF EXISTING ENVIRONMENT

**Table 2. Environmental baseline**

DATA ITEM	SUBPROJECT DATA
<b>PROJECT LOCATION</b>	
Commune(s):	Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai
District:	Ninh Son, Phan Rang - Thap Cham city, Ninh Hai
Province:	NinhThuan
Geographic location:	From 11°32' N ÷ 11°40' N. From 108°52' E ÷ 109°04' E.
<b>PHYSICAL ENVIRONMENT CONDITIONS</b>	
Air quality, noise and vibration	Air quality & noise: Major activities in the subproject area are agricultural production activities. There are no industrial parks and factories, thus the air is not polluted. The results of air quality analysis at Bao An commune on 11/07/2013 from VIECA (Vinacontrol Environment Consultancy and Appraisal Joint Stock Company) show that the content of SO <sub>2</sub> , CO, NO <sub>2</sub> , noise are 108 µg/m <sup>3</sup> , 11290 µg/m <sup>3</sup> , 69µg/m <sup>3</sup> , 64.3 dBA. They are bellow Vietnamese Standard (QCVN 05:2009 and QCVN 26: 2010).
Climate and natural disasters	Ninh Thuan province is the driest climate area in the country. The temperature is high all year long, the difference of temperature of each seasons are not much; Average temperature is 27.1°C; The highest point of temperature is 40,5°C (on 06-06-1983); Rainy season is from Sep to Dec, rainfall accounts for 70÷80% of the year, dry season is from Jan to Aug, rainfall accounts only 20÷30%. The average rainfall 757mm/year which is the lowest level of the country.
Topography and soils	Topography of subproject area is similar to a hollow, with altitude is 10÷15m. The Lowest area of hollow is Dam Nai (area of 650 ha in Ninh Hai district) and the river mouth of Cai River of which altitude is 1÷2m. the slope of this area varies from 0,001÷0,005, gradually lower from West to East; The surrounding of irrigation area is the transition area between mountain and plain, of which altitude is 50÷15m. Pumping irrigation methods can be applied in this area for agriculture cultivation; Cai river is the largest one flowing through subproject area, divides irrigation into 2 separated areas. In addition, it is also the main drainage axis of region. The soil in the subproject area contains silt and grey silt.
Waterbodies	There are Cai river, and canals in the subproject area. There is no waste water of the subproject discharging into them. Water of the river and canals is mainly used for agriculture purpose.
Underground water	Groundwater is at shallow layers. As observed, deep well is 3-7 m from the ground surface. The results of air quality analysis at Bao An commune on 11/07/2013 from VIECA show that parameters such as pH, hardness, TSS, Zn, As, Hg, Pb, Cd, coliform are within allowed limits compared to Vietnamese Standard-QCVN 09: 2008/BTNMT
Water quality	According to the Vietnam Environment Administration, results of water quality analysis in 2012 - 2013 show that parameters such as pH, DO, PO <sub>4</sub> <sup>3-</sup> , NH <sub>4</sub> <sup>+</sup> , NO <sub>2</sub> <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , BOD <sub>5</sub> , COD of Northern main canal at Luong Cang hamlet – Nhon Son commune - Ninh Son district and Do Vinh ward - Phan Rang Thap Cham

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DATA ITEM	SUBPROJECT DATA
	<p>city and Xuan Hai commune – Ninh Hai district are within allowed limits compared to Vietnamese Standards (QCVN 08: 2008/BTNMT, Column B1) except TSS, Fe and coliforms. So that water quality of this canal in the project area is polluted.</p> <p>+ Vietnam's current standards on surface water quality:</p> <ul style="list-style-type: none"> <li>- QCVN 08:2008/BTNMT - National technical regulation on surface water quality;</li> </ul> <p>+ Vietnamese standard on waste water receiving sources:</p> <ul style="list-style-type: none"> <li>- QCVN 14:2008/BTNMT National technical regulation on domestic waste water; This regulation is applied as a substitution for Standard TCVN 6772:2000 – Water quality – Standard on domestic wastewater in the List of Vietnam's environment standards which must be applied</li> <li>- MONRE's Circular No. 02/2009/TT-BTNMT regarding regulations on evaluation on waste receiving capability of water source.</li> </ul>
Flooding	This area always has been in state of inundation and drought , 2 times per year (mainly in rainy season from Sep to Oct)
Terrestrial flora and fauna	<p>+ Terrestrial flora: mainly rice field, grape, Vietnamese apple, corn, bean and vegetables gardens in residential areas;</p> <p>+ Terrestrial fauna:sheep, goat, cow, pig, chicken, ducks, etc.</p> <p>+ Terrestrial flora and fauna in subproject area are not listed in Vietnam's Red Data Book.</p>
Protected areas	In subproject area, there is no historical or historical vestiges;
Environmental sensitive points	<ul style="list-style-type: none"> <li>- Residential area in Luong Cang, Nha Ho, Luong Tri, Dac Nhon, Lang Ngua, Nui Ngong hamlets, NhonSon commune, Ninh Son district;</li> <li>- Residential area in Do Vinh ward, Thanh Hai commune - Phan Rang city;</li> <li>- Residential area in Xuan Hai, Ho Hai communes–Ninh Son district;</li> <li>- Le Duan high school in Nha Ho hamlet - Nhon Son commune;</li> </ul>
<b>SOCIAL ENVIRONMENT CONDITIONS</b>	
UXO	This is old canal which was built before 1975. During management and exploitation process, Ninh Thuan Irrigation Work Exploitation Limited Company always implemented dredging and repairing and no UXO was detected;
Land use	<p>Agriculture land: 15,508.72 ha; Non-agriculture land: 5330.22 ha; unused land: 1637.46 ha<sup>6</sup>.</p> <p>Land is mainly used for agriculture development;</p> <p>Agriculture: mainly plant rice, grape 3 crops/year;</p>
Nearest residential land	Residential areas are located along the canal and its management road and the road No. 27, material transportation roads including Nha Ho, Luong Cang, Luong Tri, Lang Ngua, Nui Ngong, Dac Nhon, hamlets - Nhon Son commune, the residential area in Do Vinh ward, Thanh Hai commune – Phan Rang city, the residential area in Xuan Hai, Ho Hai communes – Ninh Hai district;The distance between nearest residential houses and the proposed canal and its management roadranges from 3 m to 150 m;
Rural infrastructure	Rural infrastructure works in subproject including electric system, roads, railway,

<sup>6</sup>Source:PPMU of Ninh Thuan province, SIR of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province, August 2014

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DATA ITEM	SUBPROJECT DATA
	<p>schools at all level (03 kindergartens, 08 primary schools, 03 secondary schools and 01 high school), 03 medical centers, public houses at communes/districts, etc.</p> <p>These infrastructures are not located near the canal and its management road therefore extent of land occupation area and activities during construction period have no impact on existing infrastructure except for taking advantage of rural road to transfer material.</p>
Access to Water Supply & Sanitation and Solid Waste Management	<p>Rubbish is collected 3 times a week in Nhon Son commune and Do Vinh ward. Nam Thanh company is responsible for collecting rubbish. Rubbish is transported to Phan Rang solid waste treatment plant to product compost.</p> <p>There are 80% to 92.5% of people who access to sanitation latrines. Domestic waste water discharges on the ground or to ponds, lakes and low positions. There are only 20% people in Do Vinh ward is served by concentration drainage systems.</p> <p>There are 85% to 96.5% of households accessing to tap water in Nhon Son commune and Do Vinh ward. The percentage of people who use the canal water for domestic purpose is about 20%.</p>
Agriculture and handicraft	<p>+ Agriculture: mainly wet rice, bean, corn, vegetable, Vietnamese apple, grape;</p> <p>+ Handicraft: production of ceramic art, production of wine</p>
Population	Estimated number of people of 11 communes in the subproject area: 125,734people. Population density is 470-1249persons/km <sup>2</sup> <sup>7</sup>
Ethnic minorities	Ethnic minority people in the subproject area is mainly Cham and Raclay accounting for 0.8 to 25% of the population;
Livelihoods	<p>+ The main employment of the community is agriculture and handicraft production, occupying 98% of the local population.</p> <p>+ The average income is VND 10.4 to 17.36 million/person/year;</p> <p>+ The level of poverty (following the new poverty line made by the Government): number of poor households makes up 4.8% to 8% of the population, mainly including ethnic minority households.</p>
Physical and cultural heritage	There is no cultural heritage or preservation area in the subproject region;
Public health	<p>Diseases which often occur in the summer are diarrhea, petechial fever</p> <p>Besides, there are respiratory diseases like sore throat, sinusitis</p>

<sup>7</sup>Source: PPMU of Ninh Thuan province, SIR of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province, August 2014

## 4. ENVIRONMENTAL IMPACT SCREENING

Table 3. Environmental impact screening

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
<b>Pre-Construction Stage Impacts</b>					
Environmentally responsible procurement and SEMP preparation	Yes	N/A	N/A	N/A	<p>Including environmental requirements in bidding documents and civil work contracts will take importance role to fully reflect environmental protection cost of the civil works and engage the environmental responsibilities of civil contractors. Any missing of environmental management cost will create high risks of implementing mitigation measures during the construction phase due to lack of resources and capacity thus, environmental protection cost and responsibility need to involved at the beginning.</p> <p>More Site Environmental Management Plan (SEMP) will help the contracts deeply understanding on environmental requirement and preparing detail/specific mitigation action on the site, therefore, the an appropriate SEMP will help to implement actual mitigation measures and identify any unanticipated environmental impacts and propose additional mitigation measures.</p>
Plan construction materials management	Yes	N/A	N/A	N/A	Materials Management Plan (MMP) detailing arrangements to be made to facilitate the timely production and supply of construction materials to avoid impacts due to unnecessary stockpiling outside the Project site.
Plan Spoil and Waste Disposal	Yes	N/A	N/A	N/A	Waste Management and Spoil Disposal Plan is prepared for handling, storage, treatment, transport and disposal of solid and liquid wastes, hazardous materials, hazardous wastes and excavation spoils. Ensuring disposal of excavation spoils will not cause negative visual impacts. The plan will also provide details of a trip ticket system to ensure that contractors dispose excavation spoils in approved areas. Such system will be designed so that the PPMU and construction supervisors could readily monitor the volume and disposal site of excavation spoils, and to ensure that the total volume of spoils disposed will not exceed the maximum capacity of disposal site (landfill). Domestic waste collection and management also need to set plan during this phase to



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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					avoid missing implementation resources and sanitation issues on the site.
Disturbance of unexploded mine and bomb (UXO)	No				The canal and road are upgraded on the existing route. Therefore, there will be no possibility of UXO.
Effects on households from loss of residential or agricultural land	Yes	Minor	Negative	Temporary	<p><b>Description:</b> There are 209 households residing in Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets - Nhon Son commune, Group 1 and 8 - Do Vinh ward be affected by subproject. The main impacts include loss of 7.74 ha of agricultural land and 0.45 ha of garden land.</p> <p><b>Location:</b> Nha Ho 2, Luong Cang 1, 2, DacNhon 1, 2, 3, Lang Ngua and Luong Tri hamlets - Nhon Son commune, Group 1 and 8 - Do Vinh ward;</p> <p><b>Objects:</b> Local households</p> <p><b>Affected level:</b> The impact is considered not significant since there are no significantly affected households, no one that will require physical relocation, no production land loss of more than 10% of the total. The affected households will received support and compensation for their acquired land from the subproject.</p> <p><b>Time of impact:</b> Permanent</p>
<b>Construction Stage Impacts</b>					
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas and transportation for construction materials	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Stone, sand and soil will be purchased from licensed mines. These mines are operated in accordance with environment protection requirements of Ninh Thuan DONRE. The owners of these mines take responsibilities for any environmental problems related to vegetation clearing and water quality. Materials from these mines will be transported to construction sites by contractors. Transportation of material to the construction sites will generate noise, dust which affect local residents along transportation routes and near the construction sites.</p> <p><b>Location:</b> Filling soil will be taken from Deo Cau borrow pit that have the business license of Ninh Thuan province. It is located 5 km from the construction sites.</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<p>Transporting roads are concrete (Nhon Son, Do Vinh commune's roads) and asphalt (road no.27). Some sections of commune's roads are earth.</p> <p><b>Affected objects:</b> The local roads in Nhon Son commune and Do Vinh ward. Local residents along transportation road in Nhon Son commune and Do Vinh ward.</p> <p><b>Affected level:</b> Small However, dust and noise will not be seriously affected because (i) loading capacity of vehicles is less than 10 tons, (ii) communal roads are almost structured of concrete with the width of 3.5-5m; (iii) Among the total soil about 35,333m<sup>3</sup> must be transported; requires about 40 tip trucks with a capacity of 7 tons within 09 months;(iv) the construction time is short (only 09 months)</p> <p><b>Time of impact:</b> 09 months</p>
Erosion or sedimentation caused during clearing or earthworks	Yes	Negative	Minor	Temporary	<p><b>Description:</b> In the work of excavating the canal, the road and filling the banks of the proposed canal, the road, construction of on the canal structures such as culverts, water inlets and outlets, spillways, if excavated soil is not collected then siltation will be occurred. It will be able to cause stuck in other canals that pass through the proposed canals, and create filling situation that affects cultivation areas of residents.</p> <p><b>Location:</b> The intersections of the proposed canal and 43 existing irrigation canals The intersections of the proposed canal and 26existing drainage canals. The fields nearby the proposed canal and road inNha Ho 2, Luong Cang 1, 2, DacNhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai, Xuan Hai, Ho Hai communes;</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Cultivated land, rice fields closed by the subproject canals</li> <li>• Local peoples in beneficiary area</li> </ul> <p><b>Affected objects:</b></p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<ul style="list-style-type: none"> <li>• Cultivated land, rice fields closed by the subproject canals</li> <li>• Local peoples in beneficiary area</li> </ul> <p><b>Affected level:</b> minor due to excavated volume soil is reused to fill up banks of proposed canals and road.</p> <p><b>Time of impact:</b> 09 months</p>
Impacts arising from temporary storage areas including dust, noise and water quality	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Unloading materials will generate noise, dust and Uncovered material such as sand and soil may generate dust which affects local residents and water quality.</p> <p>Stone, sand will be located near the construction sites where uncultivated land to minimize affecting on living residents;</p> <p>Other items (steel, cement) will be stored at commune PCs, other public buildings or in rented houses.</p> <p><b>Location:</b> Residential areas near temporary storages</p> <p><b>Affected objects:</b> Local residents living around temporary material store sites</p> <p><b>Affected level:</b> Small</p> <p>Level of these impacts is minor because: (1) the temporary material store is mobile; (2) materials are mainly handled manually hence, dust and noise affects residential areas will not be significant.</p> <p>Stores will be located at dry places, away from water sources and channels therefore impacts on water quality will be insignificant;</p> <p><b>Time of impact:</b> 09 months</p>
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water ordisturbance of	Yes	Negative	Small	Temporary	<p><b>Description:</b> In the process of excavating, dredging the canal, road and filling banks of the canal, filling the road and constructing on canal structures, oil and grease leakage will be able to cause water and soil pollution.</p> <p>On the other hand, if waste such as spoiled soil, sand will not be collected and controlled strictly then it will able to make water turbidity increased.</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
contaminated soils					<p><b>Location:</b> At the intersections of the proposed canal and other canals as mentioned above, and construction sites in Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes;</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• The subproject canal's water quality</li> <li>• Aquatic environments</li> <li>• Groundwater quality around the subproject canals</li> </ul> <p><b>Affected level:</b> Small</p> <p>The affected level is insignificant because (i) The number of construction machines is small; (ii) the construction is scattered over 9.5km long of the canal and 14.483 km long of the road, therefore the concentration of the uncontrolled waste, oil and grease leakage is not remarkable; (iii) discarded soil is reused <b>Time of impact:</b> 09 months</p>
Changes of water quality due to changes in inlet operation which cause sedimentation or aluminiferous intrusion or pollution	No				The proposed canals are far away from the coastal area, not affected by tide. Therefore, the process of construction does not affected by salinity intrusion, aluminiferous
Making sensitive flora disappeared and deteriorated	No				The proposed canals are located on fields or near residential areas. The site clearance for construction of the canals only affects people's crops and weeds. There is no sensitive flora surrounding the subproject area.
Dust or exhaust fumes from construction equipment.	Yes	Negative	Minor	Temporary	<p><b>Description:</b></p> <p>Dust is mainly generated from excavating and dredging the proposed canal and road, filling the banks of the canal. Construction activities such as clearance, excavation of</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<p>foundation, excavation of week soil of the existing canal will result in suspend dust particles near construction sites, as well as generate gaseous emissions (NO<sub>x</sub> SO<sub>x</sub>, CO, CO<sub>2</sub>, etc.). Besides, gaseous emissions will also be generated from other construction equipment such as excavators, concrete mixing machines that if emitted near/beside residential areas, can cause health problems to the residents</p> <p><b>Location:</b> Along the roads and construction sites at Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes;</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• The subproject workers</li> <li>• Local people in the subproject area</li> </ul> <p><b>Affected level:</b> Small</p> <p>However, upgrading the canal and road does not cause serious dust or air pollution because i) the characteristics of the water facilities is constructed in moisture soil that does not cause dust (ii) the subproject area is rural, the construction site is spacious, (iii) number of construction machine is not many (12 bulldozers; 10 excavators; 10 compactors; 10 jumping jack compactors; 36 tip trucks) and distributes over 19 km length;</p> <p><b>Time of impact:</b> 09months</p>
Noise from construction equipment	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Construction activities such as clearance, excavation of foundation, excavation of sludge of the existing canal and road; mixing concrete; transport of redundant spoils to the disposal site through unpaved roads, etc. will cause the generation of noise and vibrations to be felt with the construction sites and adjacent areas. Noise and vibration will cause disturbance to the activity of local people.</p> <p><b>Location:</b> Construction sites at Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes;</p> <p><b>Affected objects:</b></p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<ul style="list-style-type: none"> <li>• The subproject workers</li> <li>• Local people in the subproject area</li> </ul> <p><b>Affected level:</b> Small</p> <p>Affected level is minor due to (i) The number of construction machine is not many (12 bulldozers; 10 excavators; 10 compactors; 10 jumping jack compactors; 36 tip trucks, 48 concrete mixing machines) and distributes over 19 km length; (ii) construction sites are mainly on the field, away from residential areas.</p> <p><b>Time of impact:</b> 09 months.</p>
Increasing time and area of flooding	No				The proposed canal has drainage function in case flood occurs in the area. However, the canal will be constructed in the dry season so it will not cause flood in the subproject area.
Impact on traffic or conditions for property access	Yes	Negative	Minor	Temporary	<p><b>Description:</b></p> <p>Construction of the proposed canal and its management road and material transportation will affect on traveling for local people in the subproject area because the proposed canal and road will pass through 22 earth and concrete roads, road no.27 and 02 asphalt roads and increasing the density of traffic on transportation roads. This will disturbance to individual households and cause risk for safety traffic.</p> <p><b>Location:</b> A long the material transportation roads including 22 commune's roads, road no. 27, no.702 and no.704;</p> <p><b>Affected objects:</b></p> <p>Local peoples living along transportation roads;</p> <p><b>Affected level:</b> Small</p> <p>Impact on traffic is minor because the traffic in the subproject area in low density with main transport vehicles of local peoples are motorbike and bicycle; people can use branch route in the communes to travel during construction.</p> <p><b>Time of impact:</b> 09 months</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Electricity cables were arranged in parallel with commune's roads in some sections. The raw water pipeline was arranged in parallel with the proposed canal and road. Moreover the proposed canal and road will pass through commune's roads and roadno.27, road no.702, no.704 therefore, the canal and its management road will be able to affect on some local infrastructure works such as roads and electricity cables, the raw water pipeline; Besides, the roads will able to be damaged by trucks duringtransporting construction materials if they are over load.</p> <p><b>Location:</b> Commune's roads, roads no.27, no.702, no.704</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Local infrastructure works</li> <li>• Local peoples in the subproject area</li> </ul> <p><b>Affected level:</b> Small</p> <p>However, this impact is not significant because the number of construction machine is not many (12 bulldozers; 10 excavators; 10 compactors; 10 jumping jack compactors; 36 tip trucks) and the subproject will be constructed in only 09 months.</p> <p><b>Time of impact:</b> 09 months</p>
Employment or livelihood benefits from employment of local people	Yes	Minor	Positive	Temporary	<p><b>Description:</b> Contractors will use local laborers for simple works such as moving soil, give priority to poor families, female householders, woman if they need jobs. It aims to raise their income, create more jobs and contribute to hunger elimination and poverty alleviation for community.</p> <p><b>Location:</b> 11 communes in the subproject area</p> <p><b>Affected objects:</b></p> <p>Local people in the subproject areas such as Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected level:</b> Small</p> <p>This is a positive impact; however, it requires the coordination between the contractor and CPC of subproject communes and nearby communes in recruiting local labors.</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					(contractors often prefer to engage their own trained workforces rather than training unskilled laborers) <b>Time of positive impact:</b> 09 months
Effects on nearby heritage items such as graves, pagodas etc.	No				The subproject does not affect any national or local heritage items such as pagodas, temples, gravestones nearby the proposed canals.
Construction workers cause social disruption	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Construction workers can cause social effects or disease transmission such as sore eyes, cholera, flu and respiratory problems.</p> <p>Social aspect: some social problems can appear such as gambling, drug addiction, prostitute, violence, conflict amongst workers, or between workers with local people.</p> <p>Workers have to get temporary residence certificate to avoid social disruption in the subproject area.</p> <p><b>Location:</b> Workers' camps along the proposed canal the road and residential area at Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes..</p> <p><b>Affected objects:</b></p> <p>Affect directly on workers and indirectly on the community near the construction site. Workers have to get temporary residence certificate to avoid social disruption in the subproject area. Some social problems can appear such as gambling, drug addiction, prostitute, violence, conflict amongst workers, or between workers with local people.</p> <p><b>Affected level:</b> Small</p> <p>Impacts are at unremarkable levels because the construction activities of workers can be controlled by working regulation in the construction site and construction duration is not long (within 09 months expected);</p> <p><b>Time of impact:</b> 09 months</p>



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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Risk to health and safety to local people or construction workers	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Risks to public and construction worker health or safety could be raised due to the following reasons:</p> <ul style="list-style-type: none"> <li>- Construction machines and equipment are arranged along the canal, obstructing the travelling of the residents and endangering the traffic, especially at nights;</li> <li>- There will be the risk of unsafe traffic conditions on the commune road, especially at intersection with residential road.</li> <li>- Dust and noise from material transport will have impacts on daily life of residents living in the subproject area;</li> <li>- There will be the risk of site incidents on workers due to the improper use of equipment and machines;</li> <li>- Sewage from construction activities and domestic use of workers. This causes some respiratory diseases for local people as well as workers. Accidents may occur if during the construction, workers are not provided with safety equipment and obey construction regulations.</li> </ul> <p><b>Location:</b> Residential area near the construction sites and material transportation roads; Construction sites along the proposed canals.</p> <p><b>Affected objects:</b> Affect directly on workers and indirectly on the community near the construction site.</p> <p><b>Affected level:</b> Small Exhaust fume, dust and noise do not have remarkable affects on residents because of small quantity, low transport frequency of trucks (40 trips/day) and short construction period (within 09 months as expected) Other impacts mentioned above are insignificant because the contractor will apply measures to mitigate impacts on the environment, on workers as well as local people in the subproject area. Besides, the contractor will provide workers with safety equipment. Number of workers is not great (during construction, there are often fewer than 100 persons). However, the level of contagiousness depends on the control of construction unit and local authority;</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<b>Time of impact:</b> 09 months
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Lining the canal and constructing road as well as operations of the worker's camp is expected to generate solid waste such as spoil excavation soil and other construction waste mortar, sand, stone, cement packing, commodity goods packaging, etc. and domestic waste from worker's camp which if not regularly collected and properly disposed of, may be carried away by surface run-off into irrigation canals. Soil and debris in the canals will clog the waterways, deteriorate its water quality, and may cause the over flow of the canals cause flash flooding during strong rains. Excess soil and debris that gets into the productive agricultural land may reduce the productive areas. If domestic waste from worker's camp is not regularly collected, it may cause health problems for workers and people living near the worker's camp.</p> <p><b>Location:</b> Workers' camps along the proposed canal and road in Nha Ho 2, Luong Cang1, 2, DacNhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes; material stores, Deo Cau borrow pit.</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Air quality in &amp; around worker camps</li> <li>• Water quality of water bodies near by worker camps</li> <li>• Workers living in the camps</li> </ul> <p><b>Affected level:</b> Small</p> <p>Solid waste that will be generated from construction mainly includes domestic waste of workers and scraps of transported soil and stone, debris, mud. Number of worker is not big, total about 100 workers, construction activities mainly include dredging 9.5 km of the proposed canal; excavating 14.483 km of the proposed road therefore, generation of construction waste is not so much about 30 m3/month (construction waste) and 1.5 tons/ month (domestic waste)</p> <p><b>Time of impact:</b> 09 months</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Impacts on irrigation activities	Yes	Negative	Minor	Temporary	<p><b>Description:</b> Construction of the canal and road requires dry construction area, meaning of stop water flow in the existing canal. A prolonged suspension of irrigation water supply may seriously affect crop production most especially paddy rice and grapes that are greatly dependent on moisture. There will be a conflict between water demand for agriculture and construction demand during cultivation period and construction time;</p> <p><b>Location:</b> The proposed canal and downstream cultivation area including Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes;</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Cultivated land, grape fields, rice fields irrigated by the subproject canals</li> <li>• Local peoples/farmers using water supply by the project canals</li> </ul> <p><b>Affected level:</b> Small</p> <p>Irrigation schedule could be changed flexibly to construction time; Moreover, local farmers are highly welcomed for canal upgrading, directly support their irrigation works; therefore this impact could be mitigated and impact level is considered at small level;</p> <p><b>Time of impact:</b> 45 days</p>
Environmental Recovery	Yes	Minor	Negative	Temporary and Permanent	<p><b>Description:</b> If after completing the construction of canals and road, the sites are not cleaned up, construction waste and domestic waste from camp sites will cause pollution for the environment. If contractors do not implement site restoration such as re-planting trees or grass, filling up construction pits, removing camp sites in accordance with environmental regulation then environmental problems such as erosion, sedimentation, and accident may occur.</p> <p><b>Location:</b> construction sites, disposal areas and borrow areas</p> <p><b>Objects:</b></p> <ul style="list-style-type: none"> <li>• People living near the proposed canal, road and camp sites and disposal, borrow areas</li> </ul>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<ul style="list-style-type: none"> <li>Land and water near the proposed canals and disposal, borrow areas</li> </ul> <p><b>Affected level:</b> Small</p> <p>As the amount of waste generated from construction activities and domestic waste is not much about 30 m<sup>3</sup>/month (construction waste) and 1500 kg/ month (domestic waste) and it will be collected every week so the remained amount of waste after construction will be small. Camp sites are assumed in small size and in simple structures.</p> <p><b>Time of impact:</b> temporary to permanent</p>
<b>Impacts in operation stage</b>					
Inundation of sensitive vegetation from operation of the canal	No				Upgrading the canal will not cause flooding situation due to increment of irrigation area. On canal structures such as inlets, outlets and other controlling systems will be operated properly to handle flood. Moreover, there is no sensitive vegetation in the subproject area.
Excessive exploitation of surface water will make water supply capacity cannot catch up with demands and/or cause conflicts among households	No				Reasonably exploit the surface water according to approved design task of the works with an irrigation capacity of 6000 ha; Increase the ability to meet the water demand for agriculture, especially the area has not been watered for long time; thereby harmonize the conflicts between households using water.
Water quality is changed due to salinity intrusion, aluminiferous water or sedimentation	No				The subproject area is not affected by seawater or tide, so it is not affected by salinity intrusion or aluminiferous; The proposed canals will be lined by concrete so the water will not be polluted by sediment.
Water is exploited at sensitive ecological	No				There is no sensitive ecological areas or protection areas in the subproject area;

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
places/or reservation areas					
Productivity is improved by increase of irrigation capacity	Yes	Positive	Significant	Permanent	<p><b>Description:</b> Increasing irrigation area to 6000 ha; cultivation productivity and diversification plants in the subproject area are increased.</p> <p><b>Location:</b> Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected objects:</b> Local peoples in beneficiary area</p> <p><b>Affected level:</b> Significant</p>
Cultivation habits will be changed due to the turning of land use for agriculture purposes	Yes	Positive	Significant	Permanent	<p><b>Location:</b> The utilization area of agricultural land will be increased at less cultivated area where often occurs drought in Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes</p> <p><b>Affected objects:</b> Local peoples in beneficiary area</p> <p><b>Affected level:</b> Significant</p>
Reduce nutrition in the soil due to over-irrigation	Yes	Minor	Negative	Permanent	<p><b>Description:</b> There is not statistics or research in the area regarding the percentage loss of nutrients. Actually, the rate of soil nutrient loss is very small due to the cultivation in the plain with small slope that can not cause drift of soil when it rains or excessive irrigation. After the proposed canals are completed, the regulating system will be facilitated and more flexible, hence, the land will not lose nutrients due to excessive irrigation.</p> <p><b>Location:</b> beneficiary area in Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Soil quality of Cultivated land</li> </ul>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<ul style="list-style-type: none"> <li>Local peoples in beneficiary area</li> </ul> <p><b>Affected level:</b> Small Small due to application of advanced technology in agriculture;</p>
Soil erosion or scouring of streams or canals	No				The canal is built from concrete so that soil erosion and land slide will not occur;
Congested canals cause flooding situation	Yes	Negative	Minor	Permanent	<p><b>Description:</b> In case of improperly operation and regulation of the culvert system, water will cause overflows and broke the canals. In addition, waste on the canals can cause stuck in the canals.</p> <p><b>Location:</b> Along the proposed canal.</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>The subproject canals</li> <li>Local peoples in beneficiary area</li> </ul> <p><b>Affected level:</b> Small In case of improperly operation and regulation of the culvert system, water will cause overflows and broke the canals. In addition, waste on the canals can cause stuck in the canals.</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Risks caused by natural calamity	Yes	Minor	Negative	Permanent	<p><b>Description:</b> Natural calamity will have serious affects on resident life as well as economic growth in the region.</p> <p><b>Location:</b> The subproject area, especially in Nha Ho 2, Luong Cang 1, 2, DacNhon 1, 2, 3, Lang Nguva and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes; Houses, Cultivated area &amp; infrastructures in the project area</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Local peoples in the subproject area</li> <li>• The subproject canals</li> </ul> <p><b>Affected level:</b> Small</p> <p>Natural calamity will have serious affects on resident life as well as economic growth in the region. However, directly impacts on canals are minor because their positions are in paddy field, not directly suffered from river or dynamic flow damage.</p>
Affecting water quality due to the increased volume of pesticide or chemical used for water treatment or increasing the waste water	Yes	Negative	Minor	Permanent	<p><b>Description:</b> After constructing the canals, the cultivated area will increase about 6000 ha. Consequently, the quantity of pesticides or chemical fertilizers will be increased. The amount of pesticides on field surface and drainage system will affect the quality of agricultural land and irrigation water, possibly groundwater. The risk will increase if the management of pesticides is not reasonable.</p> <p><b>Location:</b> Irrigation area in Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected objects:</b></p> <p>Water quality of the subproject canal &amp; others water bodies around the subproject area</p> <p><b>Affected level:</b> Small due to application of advanced technology in agriculture;</p>
Affects on employment or livelihood	Yes	Positive	Significant	Permanent	<p><b>Description:</b> Increase incomes and living standards for people in the subproject area by means of increasing the agricultural land area for production, cultivation productivity and diversification plants of seasonal crops</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					<p><b>Location:</b> The subproject area in Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected objects:</b> Local peoples in beneficiary area</p> <p><b>Affected level:</b> Significant</p>
Impacts on ethnic groups	No				No ethnic households must relocate or loss of residential land in the subproject area
Changing the service approaching ability of local residents thanks to building management road for the work	Yes	Significant	Positive	Permanent	<p><b>Description:</b> Management road combined with traffic road will increase the approaching ability of local residents to services from markets, areas for commodity and agriculture product exchange.</p> <p><b>Location:</b> along the management road in Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong communes.</p> <p><b>Affected objects:</b> Local peoples in beneficiary area</p>
Generating solid and liquid waste	Yes	Negative	Minor	Permanent	<p><b>Description:</b> Agricultural waste after harvested or garbage from other farming activities such as pesticide covers and straw is popular. Currently, waste has not polluted severely to the canal water quality, soil, crops and farming areas. However, in the long-term, it will affect increasingly to soil and water quality and plants if the management authorities do not control and minimize;</p> <p><b>Location:</b> The subproject area in Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward and Thanh Hai Xuan Hai, Ho Hai communes;</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• The subproject canals</li> <li>• Local peoples in beneficiary area</li> </ul> <p><b>Affected level:</b> Small</p> <p><b>Affected level:</b> Small because proper management will be applied.</p>



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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Occupying land of canal bank and canal safety corridor for individual purposes	Yes	Negative	Minor	Permanent	<p><b>Description:</b> The occupying land for planting perennial trees or for personal purpose in the right of way (ROW) of the channel corridors are remain. Occupying land for planting perennial trees are violate regulations of the Ministry of Agriculture and Rural Development on protection corridor canals and makes difficulties in implementing compensation and project execution during upgrading of the work;</p> <p><b>Location:</b> The right of way (ROW) of the corridors of canals of the sub-project in Nha Ho 2, Luong Cang 1, 2, Dac Nhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward.</p> <p><b>Location:</b> along two sides of the subproject canals</p> <p><b>Affected objects:</b></p> <ul style="list-style-type: none"> <li>• Embankment of the subproject canals</li> <li>• Local peoples in beneficial area</li> </ul> <p><b>Affected level:</b> Small</p> <p>Small because regulations of the Ministry of Agriculture and Rural Development on protection corridor canals were issued to deal with this problem.</p>

## 5. OUTLINE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

### 5.1 Environmental Mitigation Plan

Table 4. Environmental mitigation plan

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
<b>Pre-construction stage</b>				
Environment ally responsible procurement and SEMP preparation	<ul style="list-style-type: none"> <li>▪ EMP is included in tender documents to ensure that mitigation measures are budgeted and to prepare the contractors for environmental responsibilities.</li> <li>▪ Specify in bid document that Contractors shall engage capable and trained staff or site agent(s) to take responsibility for the environmental management and safety issues at the working level and to monitor the effectiveness and review mitigation measures as the sub project proceeds. Contractors recruit qualified staff to oversee implementation of environmental and safety measures specified in the EMP.</li> <li>▪ Any recent recommendations and initiatives from DONRE or other local environmental authorities will be incorporated in the EMP and updated as necessary.</li> </ul> <p>Before contracting based on the requirements of the IEE, contractors should prepare SEMP for implementation by contractors. Such SEMP shall not be in conflict with any provisions of the EMP in the IEE: Waste Management and Spoil, Disposal Plan, Materials Management Plan, Drainage Management Plan, Erosion Control Plan, Tree-cutting and Replanting Plan, Temporary Transport Management Plan, Utilities and Irrigation Re provisioning Plan, Noise and Dust Control Plan, and Workers and Public Safety Plan</p>	Design Consultant, PPMU, Contractor, Environmental Consultant		Included in the contract

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<p>Plan construction materials management</p>	<p>As planed in design documents, the main construction material will be purchased from Phan Rang city and Deo Cau licensed borrow pit and quarry near the subproject area.</p> <p>In case that, above material source will be changed, an appropriate material management plan should include the following:</p> <ul style="list-style-type: none"> <li>▪ Required materials, potential sources and estimated quantities available;</li> <li>▪ Material supply manners: preferring to purchase from existing material quarries.</li> <li>▪ Agreement with the local authorities</li> <li>▪ Check with environmental permission/certification of the quarries to ensure that environmental impacts and mitigation measures have been considered by owners.</li> <li>▪ Environmental recovery plan</li> <li>▪ Material transportation manner plans and schedules</li> </ul> <p>Program for delivery of quarry and borrow material</p>	<p>Design Consultant, PPMU</p>		<p>Included in the contract</p>
<p>Plan Spoil and Waste Disposal</p>	<ul style="list-style-type: none"> <li>▪ Re-use of waste materials &amp; spoil disposal locations included in bid and contract documents.</li> <li>▪ Surplus soil is used for leveling the canal safety corridor; Contractors can hire Nam Thanh Trading limited company to transport rubbish to Phan Rang solid waste treatment facility at Phan Rang city</li> <li>▪ Select an properly treatment manners, preferred of for fill up the site of other projects activities/purposes</li> <li>▪ Determine waste materials &amp; spoil disposal locations. The expectation is that construction waste will be stored temporarily along the proposed road, domestic waste will be stored in rubbish bins and then will be collected and treated by Nam Thanh Trading limited company at Phan Rang solid waste treatment plant and contractors will be responsible for paying the bill.</li> <li>▪ Agreement with Nam Thanh Trading limited company need to be obtain during detail design or before starting construction activities;</li> <li>▪ Environmental I recovery plan since construction activities completed</li> <li>▪ Waste materials transportation manner plans and schedules</li> </ul> <p>Establishment of complaints management system for duration of the works</p>	<p>Design Consultant, PPMU</p>		<p>Included in the contract</p>

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Effects on households from loss of residential or agricultural land	Implement mitigation measures outlined in the subproject Resettlement Plan	PPMU		Included in resettlement report
<b>Construction stage</b>				
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas and transportation for construction materials	<ul style="list-style-type: none"> <li>▪ Operation license of Deo Cau borrow pit and quarry must be checked before purchasing construction materials. The operations licenses must include approved environmental certificate.</li> <li>▪ When transporting construction materials, canvas must be used to cover to avoid dust.</li> <li>▪ Watering the road surface based on a daily watering in the residential areas.</li> <li>▪ Trucks must be in good condition and be maintained regularly.</li> </ul>	Contractor		No marginal cost  No marginal cost
Erosion or sedimentation caused during clearing or earthworks	<ul style="list-style-type: none"> <li>▪ Install sediment fences and/or sediment traps at intersections of the proposed canal and existing irrigation and drainage canals;</li> <li>▪ Gather material, soil far from overflows which cause sedimentation.</li> <li>▪ If any excavated soil, waste or sedimentation damage cultivation area, contractors have to provide compensation for farmers.</li> <li>▪ Minimize area of land clearance and duration of works within this area;</li> <li>▪ Restoration of areas cleared for the construction sites;</li> <li>▪ Dredge sediment if necessary.</li> <li>▪ Re-vegetation after construction activity finishes.</li> <li>▪ Avoid clearing activities during the rainy season from September to December.</li> </ul>	Contractor	Sediment fences, traps.	No marginal cost
Impacts arising from temporary storage areas including dust, noise and water quality	<ul style="list-style-type: none"> <li>▪ Implement dust reducing methods as mentioned in the part "Dust or exhaust from construction equipment" at</li> <li>▪ material extraction sites or temporary material storage yards;</li> <li>▪ Material transportation is strictly forbidden in the evening when stores are located next to residential areas;</li> <li>▪ All material storage areas and material production areas shall be located at least 50 meters from any residence. Cover sand loads with nets or sheets if materials are stored within 50 m from houses</li> </ul>	Contractor		No marginal cost
Pollution of waterways, aquatic	<ul style="list-style-type: none"> <li>▪ Store chemicals in secure area, with concrete floor and weatherproof roof and away from watercourses and floodplains;</li> </ul>	Contractor	Tanks for storing chemicals,	Included in the contract

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POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils	<ul style="list-style-type: none"> <li>▪ Ensure construction equipment and vehicles are maintained in good conditions to avoid leakage;</li> <li>▪ Provide rubbish bins and containers at camping sites and construction sites. Transport waste regularly from the sites to the Phan Rang solid waste treatment facility at Phan Rang city (This will be committed by the contractor and the contractor can hire Nam Thanh Trading limited company to transport the rubbish)</li> <li>▪ Install sanitary toilets with septic tanks following sanitation regulation and washing facilities at construction camps.</li> <li>▪ Collect debris, sludge at the construction sites.</li> <li>▪ Avoid directing discharges from concrete mixing equipment to waterways</li> </ul>		sanitary toilets, rubbish bins and containers	
Dust or exhaust from construction equipment Noise is generated from construction equipment	<ul style="list-style-type: none"> <li>▪ When transporting construction materials, implement strictly dust suppression measures such as watering of exposed surfaces and covering the trucks with canvas ;</li> <li>▪ Ensure that all construction vehicles and equipment are well maintained;</li> <li>▪ All noise generation activities shall be undertaken using minimum impact intensity and only during the hours of 07:00 to 17:00, and shall be located at least 300 metres from any residence;</li> <li>▪ Provision noise protection equipment for worker;</li> <li>▪ Inform local communities near construction area about schedule and duration of construction works. Collect feedbacks from the community through, head of villages and CPC.</li> </ul>	Contractor  District/Town Support Team, CPC, DPC	Canvas, washing facilities	Included in the contract
Affects on traffic or conditions for property access	<ul style="list-style-type: none"> <li>▪ Install signal lamps and sign panels at crossing points with road branches. Limit the speed of means of transport on the route;</li> <li>▪ Limit construction activities on local roads and avoid implementing construction at rush hours (at the time of harvesting crops)</li> <li>▪ Notify nearby community of schedule and duration of construction.</li> </ul>	Contractor		No marginal cost

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POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	<ul style="list-style-type: none"> <li>▪ Avoid impacts on low-voltage lines in villages during transport of materials and construction machinery by using vehicles and machines with the heights below electric wires;</li> <li>▪ Minimize using heavy trucks for transporting materials in wet weather to avoid accidents from crashing into houses or works at road edge due to slippery roads;</li> <li>▪ Contractors must repair material transportation roads if they damage them.</li> <li>▪ Comply traffic regulations (limit the velocity of trucks);</li> <li>▪ Install warning signs and avoid crashes to electric poles and houses.</li> <li>▪ Identify locations of raw water pipes along the proposed canal and management road to avoid damaging them when implement construction of them</li> </ul>	PPMU  Contractor		No marginal cost  No marginal cost
Construction workers cause social disruption	<ul style="list-style-type: none"> <li>▪ Consult with local Commune PC in the subproject area to arrange accommodation for workers (to avoid any negative impacts on local people's activities) and register temporary residence card for them;</li> <li>▪ Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions;</li> <li>▪ Raise workers' awareness of environmental sanitation, infectious diseases as well as prevention of HIV/AIDS and sexually transmitted diseases and dissemination on social evils like drugs, gambling, prostitution, violence, stealing, etc.</li> </ul>	Contractor		No marginal cost
Risk to health and safety to local people or construction workers	<ul style="list-style-type: none"> <li>▪ Establish safety measures as required by law and by good engineering practice and provide first aid facilities that are readily accessible by workers.</li> <li>▪ Workers shall be provided with appropriate personal protective equipment (PPE) such as safety shoes, hard hats, safety glasses, ear plugs, gloves, etc. at no cost to the employee.</li> <li>▪ Construction camps shall be provided with toilet/sanitation facilities in accordance with local regulations to prevent any hazard to public health or contamination of land, surface or groundwater.</li> <li>▪ Ensure reversing signals are installed on all construction vehicles.</li> <li>▪ Minimize impacts of dust, polluted air as mentioned above;</li> <li>▪ Request workers to collect waste as regulation and ensure that their construction</li> </ul>	Contractor	Safety equipment	Included in the contract

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POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
	<p>camps are maintained in clean and hygienic conditions.</p>			
<p>Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps</p>	<ul style="list-style-type: none"> <li>▪ Provide rubbish bins (02 bins at the main camp; 01 bin for each camp along the canal sides and its management road and request workers to collect waste and not to leave litter into any water resources;</li> <li>▪ Provide containers to collect construction waste and hazardous waste such as used oil at construction sites.</li> <li>▪ Collect solid waste regularly and rent Nam Thanh Trading limited Company to transport rubbish to the Phan Rang solid waste treatment facility in Phan Rang city</li> </ul>	Contractor	Rubbish bins and containers	Included in the contract
<p>Impacts on irrigation activities</p>	<ul style="list-style-type: none"> <li>▪ Construction of the canal and its management road should be implemented in dry season with application of construction and irrigation at same time.</li> <li>▪ The Contractor should coordinate with irrigation authority (Ninh Thuan Irrigation Work Exploitation Limited Company), commune's irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done);</li> <li>▪ Commune's irrigation staff, irrigation exploitation enterprise or relevant authorities should early inform households and contractor on water supply schedule so that they can make plan on their own initiative;</li> <li>▪ PPMU and the Contractor should pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to stop of water supply at cultivation area, etc</li> <li>▪ Proposed construction time: after harvesting: 25 April 2016 to 10 June 2016. Construction solution is construction time should be implemented at the time when irrigation activities are not done.</li> </ul>	PPMU/ Contractor; Ninh Thuan Irrigation Work Exploitation Limited Company, commune authorities and local residents in the subproject area		Included in the contract with the contractor
<p>Environmental recovery</p>	<ul style="list-style-type: none"> <li>▪ Before construction is completed, the contractor will move all construction wastes and unused materials from the sites to approved sites</li> <li>▪ Monitoring environmental recovery at working sites, worker's camps, construction waste disposal location, material stores.</li> <li>▪ Monitor survival of trees / shrubs and grass in bioengineered slopes (e.g. at</li> </ul>	Contractor		Included in the contract

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POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
	landslides, also transplanted / compensatory planting trees) and replant, as necessary.			
<b>Operation stage</b>				
Reduce nutrition in the soil due to over-irrigation	Coordinate with agriculture authority/ Agricultural extension units to ensure that farmers are trained on proper irrigation method;		DARD of NinhThuan province	Provincia l budget
Congested canals cause flooding situation	<ul style="list-style-type: none"> <li>▪ Operate regulation works canal properly, flexibly with real condition to avoid waste and water overflow at the proposed canals;</li> <li>▪ Periodically dredge irrigation canal system after harvesting crop, heavy rain and flood;</li> <li>▪ Periodically inspect and maintain canals and on canal structures.</li> </ul>	Ninh Thuan Irrigation Work Exploitation Limited Company		Provincia l budget
Risks caused by natural calamity	<ul style="list-style-type: none"> <li>▪ Ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity;</li> <li>▪ Irrigation works exploitation factory need repairs and maintain the works periodically to ensure the operation capacity.</li> </ul>	PPMU Ninh Thuan Irrigation Work Exploitation Limited Company		No marginal cost  Provincia l budget
Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water	<ul style="list-style-type: none"> <li>▪ Coordinate with agriculture authority to ensure that farmers are trained on irrigation method;</li> <li>▪ Cover, bottles from pesticide, insecticide as well as other substance such as herbicide should be stored in safety tanks at cultivation area before transport to dumping area;</li> <li>▪ Ensure weed and other floating waste are periodically cleaned along the canals;</li> <li>▪ Coordinate with Agriculture Extension Center to ensure that farmers are trained on Insect Prevention Method (IPM).</li> </ul>	Ninh Thuan Irrigation Work Exploitation Limited Company/ DARD		Provincia l budget and other assistance funds
Generated solid and liquid waste	<ul style="list-style-type: none"> <li>▪ Periodically collect waste in canals and field surface;</li> <li>▪ Build waste collection system;</li> <li>▪ Improve the awareness of local people of waste management and collection in the field, canals via training courses.</li> </ul>	Ninh Thuan Irrigation Work Exploitation Limited Company/ DARD		Provincia l budget
Occupation of canal and canal safety corridor for individual purposes	<ul style="list-style-type: none"> <li>▪ Implement strict management measures to protect the canal banks and reservoir protection area from being reoccupied (for tree planting and other encroachment) by regular check and establishment of regulations on treatment of violations (if any)</li> </ul>	Ninh Thuan Irrigation Work Exploitation Limited Company		Provincia l budget



## 5.2 Environmental Monitoring Plan

### 5.2.1 Environmental effects monitoring

6. Environmental effects monitoring is carried out to examine impacts of project in relation to ambient environmental conditions.

**Table 5. Environmental effects monitoring plan**

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
<b>Construction stage</b>						
Minimization of noise generation	Noise level	At nearest residential areas of the northern main canal and its management road and residential areas near material transportation roads in Nha Ho 2, Luong Cang 1, 2, DacNhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward.	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team	Included in separated contract with CPMU
Minimization of dust generation	Dust concentration	The same monitoring locations of Noise	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on LIC team	Included in separated contract with CPMU
Control of surface water quality	Sedimentation, rubbish, lubricating oil and solid waste	The intersections of the proposed main canal 43 existing canals; The intersections of the proposed canal and 26 drainage canals.	Visual Observation ;	Weekly and after large rain events	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Based on requirement of water supply	Local people, Community monitoring committee Local	Province budget  Without marginal

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					irrigation staff (commune)	cost
				Once every 6 months during construction or in case of at any time or in case of complaints of residents	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
Labor safety and community safety	Number, use of labor equipment; signal system Obey for traffic law of transportation mean of construction material	In construction sites and on material transportation roads along residential areas of Nha Ho 2, Luong Cang 1, 2, DacNhon 1, 2, 3, Lang Ngua and Luong Tri hamlets – Nhon Son commune, Group 1 and 8 - Do Vinh ward.	Observation and community consultation	Weekly or when community's feedback is raised	Local people, Community monitoring committee	Without marginal cost
				Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
<b>Operation stage</b>						
Surface water quality	BOD, DO, pH, TSS, Total coliform; fecal coliform, turbidity	Location: At 06 points: the beginning of the proposed canal at K0+500; northern main canal at Nha Ho hamlet; northern main canal in Luong Cang 2 hamlet (K2+900); northern main canal in Luong Tri hamlet, Nhon Son commune (K8+235); Ong Mot bridge and regulator G2 (at K10+00)	Observation and community consultation Or sampling methods following Vietnamese standard when receiving feedback from communities	Twice a year in two first years of operation (1 time in rainy season and 1 time in dry season)	DARD, Ninh Thuan Irrigation Work Exploitation Limited Company;	Included in operation cost of Ninh Thuan Irrigation Work Exploitation Limited Company
Waste management	Conditions on environmental sanitation within the	Throughout the subproject area	Observation and community consultation	Once every 6 months in first 2 years of operation	Ninh Thuan Irrigation Work Exploitation	Budget provided following regulations at Decree

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost	
	subproject area; temporary waste storage yard				Limited Company	No.115	
Periodical canal maintenance	Level of canal sedimentation and conditions of sluices, equipment and works on the main canal	Along northern canal	the main	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Ninh Thuan Irrigation Work Exploitation Limited Company	Local budget
Re-occupation of canal corridor	Occupation area, type of occupation (for planting trees or other purposes)	Along northern canal	the main	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Ninh Thuan Irrigation Work Exploitation Limited Company	Local budget

**5.2.2 Environmental Compliance Monitoring**

7. Environmental compliance monitoring is carried out to test compliance with operating procedures, technical standards and/or contractor specifications in the EMP.

**Table 6. Environmental Compliance Monitoring**

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
<b>Pre-construction Stage</b>						
Environmentally responsible procurement and SEMP preparation	Inclusion in bid docs	All canal and road alignment	Checking documents	Bid preparation, before start of civil works	PPMU	Project preparation
Plan construction materials management	Meting minutes and agreement with local authorities	All canal and road alignment	Checking documents	Prior to start of site works and throughout construction phase	PPMU	Project preparation
Plan Spoil and Waste	Meting minutes and agreement	All canal and road alignment	Checking documents	Prior to start of site works	PPMU	Project preparation

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Disposal	with local authorities			and throughout construction phase		
Effects on households from loss of residential or agricultural land	Compensation implement	All road and canal alignment	Checking documents, interview, observation	Every six months	PPMU, Resettlement Consultant	Project preparation
<b>Construction Stage</b>						
Erosion and sediment controls	Condition and capacity of controls	Throughout construction sites	Observation	Weekly and After heavy rain	CSC	Included in the contract signed with Construction Supervision Consultant (CSC) and Loan Implementation Consultant Team (LIC)
				Every six months	LIC	
Materials storage	Condition of materials storage areas	Throughout construction sites	Observation	Weekly	CSC	Included in the contract signed with CSC and LIC
				Every six months	LIC	
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leaks	Throughout construction sites	Observation	Weekly	CSC	Included in the contract signed with CSC and LIC
				Every six months	LIC	
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation	Weekly	CSC	Included in the contract signed with CSC and LIC
				Every six months	LIC	
Property access	Rehabilitate the possibility of temporary and fixed access	Affected assets: roads in commune and affected assets during construction	Observation and community consultation	Once during construction works and once after finishing construction	Construction Supervision Consultant Local Community Monitoring Boards	Included in the contract signed with CSC and LIC/ Local budget
				Every six months	LIC	
Areas of standing water	Ponded or undrained water	Throughout construction site	Observation and community consultation	Weekly during rainy season	Construction Supervision Consultant Local Community Monitoring	Included in the contract signed with CSC and LIC Local budget

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					Boards	
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
Waste disposal	Environmental sanitation at construction site and temporary waste storage area	Throughout construction site	Observation	Weekly	CSC	Included in the contract signed with CSC and LIC
				Every six months	LIC	
<b>Operation Stage</b>						
Waste management	Site cleanliness and conditions of temporary waste storage areas; recent waste disposal method	Throughout sub-project area	Observation	6 monthly for first 5 years of operation	Ninh Thuan Irrigation Work Exploitation Limited Company	Provincial budget
Using irrigation water	Using matter	Households near canals	Observation and community consultation	Once every 6 months in first 5 years of operation	PPMU/Ninh Thuan Irrigation Work Exploitation Limited Company	Budget provided following regulations at Decree No.115
Soil erosion or land slide in canal	Conditions of the canal; level of sludge in water	At sections which have not be rehabilitated	Observation	Once every 6 months in first 2 years of operation	PPMU/NinhThuan Irrigation Work Exploitation Limited Company	Budget provided following regulations at Decree No.115
Prevention of soil erosion and land slide in the canal	Conditions of canal bank	At some representative locations in subproject area	Observation and community consultation	Once every 6 months in first 5 years of operation	PPMU/Ninh Thuan Irrigation Work Exploitation Limited Company	Budget provided following regulations at Decree No.115

### 5.3 EMP Implementation Arrangements

**Table 7. EMP Implementation**

Organization	Roles and Responsibilities		
	Subproject Preparation	Subproject Implementation	Subproject Operation
CPMU	Advice to PPMU Safeguards Officer on IEE/CEP and IEE/EIAR preparation Review and provide “no-objection” on IEE/CEPs or IEE/EIARs submitted by PPMUs	Suggest to PPMU Safeguards Officer on EMP implementation during construction Monitor progress during construction Consolidate environmental reporting from PPMU	Advice to PPMU Safeguards Officer on EMP implementation during first 2 years of operation Monitor progress during first year of operation Consolidate PPMU environmental reporting
PPC	Sign-off on environmental assessment documents prior to submission for approval Approval of any subprojects requiring EIAR that are not subject to MONRE approval	Project owner with ultimate responsibility for environmental performance of subproject during construction	Project owner with responsibility for operation stage environmental performance including implementation of EMP during operation
DONRE	Provide advice and guidance on environmental issues as required during subproject preparation	Monitoring implementation of EMP through their own internal monitoring system	Monitoring implementation of EMP through their own internal monitoring system
PPMU	Engage consultant and have overall responsibility for IEE/CEP or IEE/EIAR preparation and submission for approval Ensure staff are adequately trained in environmental issues	Responsibility for EMP implementation during pre-construction and construction Ensure that contract specifications and bud documents include environmental requirements Undertake inspections and monitoring of environmental issues during construction Coordinate environmental monitoring reporting to CPMU	Responsibility for EMP implementation during first year of operation Undertake inspections and monitoring of environmental issues during first year of operation Assist project owners to incorporate environmental requirements into infrastructure O&M procedures
Town and District PCs	Approval of subproject CEPs in accordance with GOV legislative requirements	Monitoring implementation of EMP through their own internal monitoring system	Monitoring implementation of EMP through their own internal monitoring system
Town and District	Assist in IEE/CEP preparation as required	Day to day supervision of contractors’ in district	Undertake environmental

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Organization	Roles and Responsibilities		
	Subproject Preparation	Subproject Implementation	Subproject Operation
Subproject Support Teams (SST)	Assist PPMU to review bidding documents, contract documents, and tenders to ensure environmental issues are adequately addressed	including compliance with environmental management requirements Undertake environmental monitoring and coordination of local community environmental monitoring activities	monitoring and coordination of local community environmental monitoring activities for first year of operation
Commune Supervision Boards (CSBs) and local community members <sup>8</sup>	Involvement in consultation and participation activities to identify and develop subprojects Ability to comment on environmental assessment documentation upon disclosure	Involvement in environmental monitoring activities under the direction of SSTs	Involvement in environmental monitoring activities under the direction of SSTs
Construction contractor	n/a	Prepare detailed Site EMP to meet the Subproject EMP general requirements Allocate adequate resources to meet the requirements and obligations of Site EMP	n/a
Ninh Thuan Irrigation Work Exploitation Limited Company	N/a	N/a	Monitoring mitigation measure in the operation phase
LIC Team on environmental safeguard policies	N/a	Implement spot check environmental monitoring at subproject area once every 6 months. Monitoring results will be included in the report which will be sent to CPMU.	N/a
Construction Supervision Consultant	N/a	Implement construction supervision at construction sites every day. Implement environmental monitoring at subproject area every week. Monitoring results will be included in the report which will be sent to PPMU.	N/a

<sup>8</sup> CSBs have been established under Decree 80 Regulation for Participatory Investment Supervision. Article 8 of Decree 80 provides the community with opportunities to inspect compliance, monitor implementation and evaluate the results of investments in the commune, including environmental impacts.

## 5.4 Monitoring and Reporting System

**Table 8. Monitoring and Reporting System**

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
Construction	<b>Site Environmental Performance Report</b> indicating compliance with Site EMP and monitoring results	Monthly	Construction Supervision Consultant	PPMU
	<b>EMP Compliance Report</b> indicating compliance with subproject EMP and monitoring results	Quarterly	PPMU	CPMU
	<b>EMP Compliance Report</b> indicating compliance with subproject EMP and monitoring results	Bi-annually or twice during construction depending on construction duration	CPMU/LIC	ADB
	<b>Subproject Environmental Report</b> indicating overall subproject environmental performance and EMP compliance	At completion of subproject	CPMU/LIC	ADB
<b>Operation</b>	<b>EMP Compliance Report: Operation</b> indicating compliance with subproject EMP commitments during operation	Every six months for first two years of operation. Ongoing frequency to be determined based on review after 2 years	Ninh Thuan Irrigation Work Exploitation Limited Company	ADB and Town and District People's Committee

## 5.5 EMP Budget

**Table 9. EMP Budget**

Item	Marginal Costs for Pre-Construction	Marginal Costs for Construction	Marginal Costs for Operation	Marginal Costs Sub-Total
<b>Mitigation</b>				
Compensation and land clearance	In a separated item on project compensation and resettlement	No	No	Included in other items
<b>Monitoring</b>				
PPMU's Internal	Included in	Included in the	Local and	Included in



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Item	Marginal Costs for Pre-Construction	Marginal Costs for Construction	Marginal Costs for Operation	Marginal Costs Sub-Total
monitoring	management cost of PPMU	Contracts with the Contractor and CMC as well as in PPMU's management cost	provincial budget	contracts or other operation capital sources
Community monitoring	Not available (n/a)	Local budget (as in Decision No.80/2005/QĐ-TTg)	Local budget (as in Decision 80/2005/QĐ-TTg)	Local budget
Independent monitoring consultant on environmental safeguard policies	n/a	Included in a separate contract with CPMU	n/a	
Training on capacity enhancement on environmental monitoring capability	n/a		Local budget	n/a
Public disclosure	Defined in consultancy contract on IEE		n/a	Public disclosure
<b>TOTAL</b> <i>(intensify the capability and public disclosure)</i>				

## 6. PUBLIC CONSULTATION AND DISCLOSURE ACTIVITIES

### 6.1 Description of Activities to Date

Table 10. Public consultation and public disclosure activities

CONSULTATION METHOD	DETAILS OF ACTIVITIES	
Correspondence and meetings with local authorities (District and Commune PCs, Commune Fatherland Front, Women's Union, Youth Union and others)	Date of correspondence	28/07/ 2014
	Dates of meetings (if requested)	05/08/2014
	Minutes of meeting attached (Yes / No)	Yes
Public meetings	Date(s) held	05/08/2014
	Location(s) held	PC's meeting hall and cultural house of Nhon Son commune and Do Vinh ward
	Invitees	Commune PCs, stakeholders, village heads, Young Communist League, Fatherland front, Farmer Association, Women Union of the communes.
	Methods of invitation	Radio announcement and letter, coordinate with Women Union to mobilize women's participation in meetings
	Agenda attached (Yes / No)	Yes
	Minutes of meeting attached (Yes / No)	Yes
	Number of participants	Total have 47people Man: 38people Women: 09people (the list of participants will be closed in the minutes of consultation)

### 6.2 Outcomes of Public Consultation to Date

Table 11. Results of public consultation

Description of Issue Raised	By Whom?	Required Follow-up Actions?
Detailed design	Local people of Do Vinh ward	In the surveying and detailed design period, the consulting firm is expected to coordinate with local authorities to find suitable water outlets to avoid flooding in the area near the airport
Affect water supply and agriculture production especially grapes, Vietnamese apples	Local people of Do Vinh ward and Nhon Son commune	Make plan for water supply properly. Require farmer to implement in accordance with harvest
Restoration of construction site	Local people of Do Vinh ward and Nhon Son commune	It is desired that the sites will be restored after completing the construction
Traffic disturb when transporting material on road 27 and commune's roads	Local people	Do not transport materials at rush hours (6 am to 7 am; 11 am -12 pm; 5 pm- 6pm)
Traffic safety on road 27 and	Local people	The Contractors are supposed to slow down

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Description of Issue Raised	By Whom?	Required Follow-up Actions?
commune's roads		when transporting materials by the residential area along road 27 and commune's roads. It is necessary to plant construction signposts and speed limit signs
Construction workers cause social disruption and sanitation problems	Local people	It is requested that the workers maintain sanitation and public order; Register temporary residence card for workers; Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions.
Dust from construction equipment	Local people	When transporting construction materials, implement strictly dust suppression measures such as watering of exposed surfaces and covering the trucks with canvas;

**6.3 Future Public Consultation Activities**

**Table 12. Proposed community consultation activities**

Activity	Participants	Expected Outcomes	Schedule	Cost Estimate
Kick-off meeting prior to construction commencement	PPMU, the Contractor, Construction Supervision Consultant, community representatives at project area	Publicize construction contents, schedule and plan for water supply	1 week prior to construction commencement	Be estimated in EMP budget
Periodical meetings	Contractor, Construction Supervision Consultant and representatives of local authority, organizations and community at project area	Periodically check mitigation activities and arising problems Propose treatment alternatives and reach agreement on implementation	Once every month from construction commencement	Included in contract signed with parties

## **7. CONCLUSION AND RECOMMENDATIONS**

8. The subproject “Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province” will be implemented by Ninh Thuan PPMU under IRDPCP in Ninh Son district and Phan Rang city, Ninh Thuan province.
9. An environmental assessment of the project has been carried and the main negative potential environmental impacts of the sub-project during construction and operation stages include:
  - Air pollution from dust or exhaust emissions (CO, NO<sub>x</sub>, SO<sub>x</sub>, etc). Noise, vibration from construction equipments and vehicles on the road;
  - Dust and noise generated during the transport of material from material stores to the construction sites;
  - Traffic disturb when transporting material, effect on infrastructure system (electricity, road, communication cables), risks of health and safety of local people and construction workers;
  - Waste disposal problems from solid waste generated during construction activities or municipal wastes generated in construction camps;
  - Agriculture wastes (residue of vegetables, pesticide cover, straw of cultivation area) from the boundaries of the upgraded main & primary canal have been focus at the canal bed, obstructing and polluting the flow;
  - Conflicts between agriculture water supply for irrigation area and water supply stop
  - Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water;
  - Risks of natural calamity due to Storm & flood occur during rainy season.
10. A range of mitigation and monitoring measures has been developed for the sub-project, which includes the following activities:

*Mitigation measures:*

  - Measures for mitigating air pollution: During the transport of construction materials, watering the road surface and covering means of transport with canvas. Besides, other measures may include installing wheel washing equipments at construction sites and regularly maintaining vehicles and machines.
  - The Contractors do not transport materials at rush hours (6 am to 7 am; 11 am -12 pm; 5 pm- 6pm) and to be supposed to slow down when transporting materials by the residential area and to plan construction signposts and speed limit signs
  - Provide rubbish bins to store domestic waste at the construction site; request workers not to leave litter; provide containers to store construction waste at construction sites; install sediment fences and/or sediment traps to collect sediment before it enters waterways;
  - The Contractor should coordinate with irrigation authority (Ninh Thuan Irrigation Work Exploitation Limited Company), commune’s irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done)
  - During exploitation process, management authority should disseminate and consult the local authority/water users to limit the excessive use of water; establish regulated procedures and detailed water supply plan; update information year by year to inform

users, implement dissemination and training on scientific irrigation to the community for understanding and implementation,

- Avoid deteriorating soil/water quality by increasing quantity of fertilizer and pesticide Ninh Thuan PPMU should coordinate with Agriculture Extension Centre to ensure that farmers are trained on Integrated Pesticide Management (IPM)
- PPMU should ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity

*Monitoring activities:*

In order to ensure the compliance of measures to mitigate negative environmental impacts caused by the subproject, these monitoring activities must be carried out:

- The contractor must implement measures to mitigate environmental impacts in residential areas near the construction sites, along the material transportation roads and construction sites, worker's camps ect. Their implementation can be monitored by observing and measuring water quality, air quality and frequency of implementing these measures. Moreover, the contractor must arrange adequate resources to meet general requirements and compulsory regulations on EMP at the construction sites;
- During operation stage, O&M agency (Ninh Thuan Irrigation Work Exploitation Limited Company) have to periodically manage water quality according to recent Vietnamese Standards and National Technical Regulations;
- PPMU should intensify the contractor's compliance with environmental regulations on material storage, construction equipment, waste disposal, air quality, dust, noise and vibration to ensure safety for the community during construction stage and operation stage; coordinate with local authorities to formulate and implement EMP.

**Conclusion:**

11. The Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province will supply irrigation water for 6000 ha of agriculture land and improve livelihoods and reduce poverty for local people in the subproject area. It is expected to directly benefit 125,734 people in 11 communes namely Nhon Son, Do Vinh, Thanh Hai, Bao An, Xuan Hai, Ho Hai, Tan Hai, Phuong Hai, Khanh Hai, Bac Son and Bac Phong. Thus, the subproject will contribute to promote socio-economic development and modernize rural area;
12. Negative environment impacts caused by the subproject mainly generate during the construction stage. However, these impacts are temporary and they will end when the canals are put into operation. Upon completion, the upgraded road will help supply irrigation water to farmers. On the other hand, it will bring positive impacts to the environment and promote economic development for the subproject area. Thus, based on the Initial Environmental Examination, the consultants and Ninh Thuan PPMU would like to recommend as follows:
  - (i) There will not be any significant impacts to the environment and no further environment assessment is necessary.
  - (ii) The IEE of the subproject "Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system" should be approved by authorities so that next steps can be implemented to ensure good progress and project benefits.

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*Integrated Rural Development in Central Provinces Project*

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## **8. ANNEXES**

- Photos of locations of air quality monitoring
- Public consultation and meeting minutes
- Photos of implementation of public consultation
- Data source

**Annex 1: Photos of locations of air quality monitoring**



**Photo1:** Air quality monitoring point at the material transportation road in Nha Ho hamlet, Nhon Son commune



**Photo2:** Air quality monitoring point at the material transportation road near Le Duan high school in Nha Ho hamlet, Nhon Son commune



**Photo3:** Air quality monitoring point at K2+900, material transportation road in Luong Cang 2 hamlet, Nhon Son commune



**Photo4:** Air quality monitoring point in LuongTri, Nhon Son commune at the material transportation road (access road to the airport)



**Photo5:** Air quality monitoring point at regulator G2 in Do Vinh ward



**Photo6:** Air quality monitoring point along the proposed management road in the residential area of Thanh Hai commune

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**Photo7: Water quality monitoring point at the beginning section of northern main canal (at K0+500)**



**Photo8: Water quality monitoring point at northern main canal in Nha Ho hamlet, Nhon Son commune**



**Photo9: Water quality monitoring point at K2+900 - northern main canal in Luong Cang 2 hamlet, Nhon Son commune**



**Photo10: Water quality monitoring point at K8+235 - northern main canal in Luong Tri hamlet, Nhon Son commune**



**Photo11: Water quality monitoring point at Ong Mot bridge**



**Photo12: Water quality monitoring point at regulator G2 (at K10+00)**



Annex 2: Public consultation and meeting minutes

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Nhon Son commune

**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM**  
**Độc lập – Tự do – Hạnh phúc**  
 Nhon Son, ngày 6 tháng 8 năm 2014  
**DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG (Loan 2357-VIE)**  
**BIÊN BẢN LÀM VIỆC**

Hôm nay, ngày 6 tháng 8 năm 2014, tại xã Nhon Son chúng tôi gồm:

**I. Đại diện nhóm tư vấn của dự án Phát triển nông thôn tổng hợp miền Trung:**

- Ông/Bà Vũ Hoàng Lân, Chức vụ Chuyên gia MT  
 - Ông/Bà Dương Đức Chiến, Chức vụ Chuyên gia TĐC  
 - Ông/Bà..... Chức vụ.....

**II. Đại diện Ban QLDA tỉnh**

- Ông/Bà Lê Xuân Tân, Chức vụ Cán bộ BQLDA  
 - Ông/Bà..... Chức vụ.....  
 - Ông/Bà..... Chức vụ.....

**III. Đại diện địa phương**

- Ông/Bà Bùi Văn Đông, Chức vụ PCT UBND  
 - Ông/Bà Vũ Thị Hằng, Chức vụ CT HĐND  
 - Ông/Bà Trần Văn Hiệp, Chức vụ CT MT.TĐ

Nội dung làm việc:

- Đơn vị tư vấn thiết kế trình bày nội dung các hạng mục công trình của DTP tại địa bàn xã Nhon Son theo quy hoạch và chủ trương an toàn phát triển các công trình dự án. Đề xuất của dự án phạm vi ảnh hưởng chất lượng môi trường và nguồn nước. Các vấn đề môi trường. Đề xuất của dự án các biện pháp xử lý chất thải rắn, nước thải và nguồn nước. Các biện pháp xử lý chất thải rắn, nước thải và nguồn nước. Các biện pháp xử lý chất thải rắn, nước thải và nguồn nước.

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Sau khi đọc lại biên bản, những người có mặt đồng ý về nội dung biên bản, không có ý kiến gì khác.

**Đại diện Ban QLDA tỉnh**



*Trần Ngọc Hùng*

**Đại diện UBND xã**



*Bùi Văn Trọng*

**Đại diện tư vấn**

*Dương Đức Chiến*

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Nhơn Sơn, ngày 6 tháng 8 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP  
CÁC TỈNH MIỀN TRUNG - KHOẢN VAY BỔ SUNG  
BIÊN BẢN HỢP THAM VẤN CỘNG ĐỒNG

Về các chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

Tên tiểu dự án: Cải tạo nâng cấp kênh Chính Bắc Nha Trinh - Lam Cam  
Xã: Nhơn Sơn, huyện: Ninh Sơn, tỉnh: Ninh Thuận

I. Thành phần tham dự:

- |                                 |   |
|---------------------------------|---|
| - Ông/Bà: <u>Kim Văn Đông</u>   | Chức vụ: <u>PC.T. UBND xã Nhơn Sơn</u>  |
| - Ông/Bà: <u>Vũ Thị Hằng</u>    | Chức vụ: <u>CT. Hội P.N xã Nhơn Sơn</u> |
| - Ông/Bà: <u>Điền Thoa Hiệp</u> | Chức vụ: <u>CT. MTTC xã Nhơn Sơn</u>    |
| - Ông/Bà: <u>Phạm Văn Dũng</u>  | Chức vụ: <u>PG.Đ. HBC Đ. 3 - TVTK</u>   |
| - Ông/Bà: <u>Vũ Hoàng Lan</u>   | Chức vụ: <u>Chuyên gia MT - TVCT</u>    |
| - Ông/Bà: <u>Đặng Đức Chiến</u> | Chức vụ: <u>Chuyên gia ĐC - TVCT</u>    |
| - Ông/Bà: <u>Lê Xuân Tân</u>    | Chức vụ: <u>Cán bộ K&amp;LDA</u>        |

- Đại diện những hộ bị ảnh hưởng ..... người, trong đó .....nữ, chiếm....(%) , Dân tộc thiểu số.....người, chiếm....%

II. Nội dung

2.1 Các nội dung phổ biến:

- Cung cấp các thông tin về dự án như địa điểm, quy mô, các thông số kỹ thuật cơ bản ....
- Chính sách an toàn của dự án bao gồm: Chính sách về giới và sự tham gia của cộng đồng; Kế hoạch hành động giới; Chính sách môi trường, Chính sách Tái định cư và kế hoạch phát triển người dân tộc thiểu số.

2.2 Tham vấn cộng đồng:

- Tham vấn các vấn đề giám sát và tham gia của cộng đồng trong các giai đoạn chuẩn bị, thực hiện, vận hành tiểu dự án, các vấn đề về giới và lồng ghép giới, nhóm dễ tổn thương, hộ bị ảnh hưởng nặng...

- Tham vấn các vấn đề về môi trường, tác động môi trường tiềm năng của dự án bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực;
- Tham vấn các vấn đề về tái định cư, các tác động dự kiến, quyền lợi của người bị ảnh hưởng, các biện pháp giảm thiểu tối đa nhằm có ít tác động nhất đến người bị ảnh hưởng.
- Tham vấn nhu cầu đào tạo của các hộ bị ảnh hưởng.

### III. Ý kiến thảo luận

#### III.1. Các vấn đề về giới, tham gia cộng đồng

- Thời gian cắt nước 45-60 ngày có thể ảnh hưởng đến sản xuất và người dân địa phương.
- Có thể ảnh hưởng đến diện tích đất sản xuất của một số hộ thôn lương. Cần có cây trồng, cây nhỏ.
- Nhu cầu xây dựng một số cầu (cầu dân sinh) thôn lương.
- Hội phụ nữ nhận trách nhiệm dự án, và sẽ vận động thành viên trong Hội tham gia vào các bước thực hiện Dự án.
- Ban CS.Đ. sẽ tham gia vào các bước thực hiện Dự án để giám sát trong cả quá trình thi công và vận hành của Dự án.

#### III. 2. Các vấn đề về môi trường

- Quá tải vận chuyển vật liệu có thể gây bụi, ảnh hưởng đến giao thông đi lại.
- Quá tải sinh hoạt của công nhân có thể ảnh hưởng đến an ninh trật tự xã hội địa phương, nước thải và rác thải.
- Đảm bảo an toàn lao động, trợ giúp thi công.

III.3. Các vấn đề về tái định cư và dân tộc thiểu số

- Các di dân từ miền núi xuống sẽ được áp dụng theo quy định của luật.
- Một số hộ tại các thôn có diện tích bề ngang hẹp và dọc theo kênh mương. Khi thực hiện Dự án sẽ ảnh hưởng đến quá trình sản xuất của các hộ. Do đó, để giải quyết dự án có phương án hỗ trợ cho hợp lý.

IV. Kết luận

- Bộ cơ nhân dân đồng ý hỗ trợ thực hiện dự án.
- Dự án mang lại nguồn lợi lớn cho người dân địa phương.
- Luôn được các phương tiện vận chuyển hỗ trợ.
- Hộ dân bị ảnh hưởng khi thực hiện xong sẽ mang lại nhiều quả cho việc sản xuất của các hộ BAH.
- Dự án cần tính toán để giảm thiểu thiệt hại cho việc sản xuất nông nghiệp trong quá trình triển khai.

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

Cuộc họp các bên thống nhất và kết thúc vào lúc 11h ngày 6 tháng 8 năm 2014

**Đại diện cộng đồng**

**Đại diện UBND xã**  
  
*[Signature]*  
**Bùi Văn Trọng**

**Đại diện Ban QLDA tỉnh**

  
*[Signature]*  
**Trần Ngọc Hùng**

**Đại diện tư vấn**

*[Signature]*  
**Dương Đức Chiến**

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Nhơn Sơn..., ngày...6...tháng...8...năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG –  
KHOẢN VAY BỔ SUNG

**DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP**

(Tham vấn cộng đồng về chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số)

Tên tiểu dự án: Cải tạo kênh chính Bắc Nha Trinh - Lâm cam  
Xã: Nhơn Sơn, huyện: Nhơn Sơn, tỉnh: Ninh Thuận

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
1	Trần Mạc	Nam	Núi Ngang		
2	Hà Lê Hùng	"	Đặc Nhóm 1		
3	Nguyễn Tâm Hùng	"	Lương Cang 1		
4	Hoàng Ngọc Phong	"	Đặc Nhóm 3		
5	Lê Hồng Hà	"	Đặc Nhóm 3		
6	Nguyễn Công Phước	"	Đặc Nhóm 1		
7	Huỳnh Thanh Tuấn	"	Lương Cang 1		
8	Phùng Bảo Quyền	"	Lương Cang 2		
9	Trần Duy Phước	"	Lương Trì		
10	Nguyễn Thái Hùng	"	Lương Cang 1		
11	Vũ Đức Chính	"	TT Nhà Hố 1		
12	Đào Văn Long	"	Quỹ 021		
13	Đào Văn Chí	"	"		
14	Chánh Ngọc Sơn	"	"		
15	Phạm Lê	"	Đặc Nhóm		
16	Nguyễn Đình Minh	"	Lương Trì		
17	Đình Lưu	"	Lương Trì		

Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
18	Vũ Thị Hằng	Nữ	Nha Hộ 1 - Nhân Sơn	Hằng	
19	Võ Thị Lành	nt	Lương Gang 1 - NS	Lành	
20	Hồ Thị Mỹ Lan	Nữ	Lương người	mylan	
21	Hứa Thị Ngọc Thương	Nữ	Lương tại	Thương	
22	Nguyễn Thị Ngọc Huệ	Nữ	Nha Hộ 2	Huê	
23	Trần Thị Ngọc Nương	nt	Điền nhân 1	Nương	
24	Võ Thị Bạch Hài	nt	Điền nhân 2	Hài	
25	Tạ Văn Ninh	Nam	Lương Gang 1	Ninh	



**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
26	Mai Văn Đới	Nam	A. Nhóm 2		
27	Ko Văn Thuận	"	A. Nhóm 2		
28	Hứa Văn Thường	"	Lũy Tai		
29	Đỗ Anh Hùng	"	Lũy Càng 2		
30	Hồ Sĩ Dũng	"	Điền Nhóm 3.	<i>Hong</i>	
31	Nguyễn Văn Long	"	Lũy Càng 1	<i>vanlong</i>	
32	Trần Quốc Toàn	"	Mã Hồ II	<i>Toan</i>	
33	Lê Trọng Nhân	"	Mũi Lông.	<i>HL</i>	

Đại diện cộng đồng

Đại diện UBND xã



Đại diện Ban QLDA tỉnh

Đại diện tư vấn



*Phuot*  
Đường Đức Chiến

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Do Vinh ward

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Đo. Vinh., ngày 06 tháng 08 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG (Loan 2357-VIE)

BIÊN BẢN LÀM VIỆC

Hôm nay, ngày 06 tháng 08 năm 2014, tại p. Do Vinh..... chúng tôi gồm:

I. Đại diện nhóm tư vấn của dự án Phát triển nông thôn tổng hợp miền Trung:

- Ông/Bà... Vũ Hoàng Lân..... Chức vụ... Chuyên gia M&T
- Ông/Bà... Dương Đức Chiến..... Chức vụ... Chuyên gia I&C
- Ông/Bà..... Chức vụ.....

II. Đại diện Ban QLDA tỉnh

- Ông/Bà... Đặng Nguyễn Lưu Đức..... Chức vụ... Cán bộ kỹ thuật
- Ông/Bà..... Chức vụ.....
- Ông/Bà..... Chức vụ.....

III. Đại diện địa phương

- Ông/Bà... Nguyễn Hữu Thọ..... Chức vụ... PCT UBND phường
- Ông/Bà... Nguyễn Thị Mỹ Kiều..... Chức vụ... CT Hội P.V.
- Ông/Bà..... Chức vụ.....

Nội dung làm việc:

- Đón tiếp tư vấn thiết kế tại đây, nội dung các hạng mục công tác tư vấn dự án Phát triển nông thôn tổng hợp miền Trung.
- Đón tiếp tư vấn quản lý về chi phí an toàn tại đây, các nội dung về an toàn môi trường, chi phí tại chi phí, phát triển dân cư hiện tại.
- Tham vấn ý kiến đóng góp của các tổ chức đoàn thể địa phương và đại diện các tổ dân phố về những vấn đề cần chú ý khi thi công các hạng mục công tác.
- Thu nhận ý kiến đóng góp và thống nhất ghi biên bản làm việc.

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

Sau khi đọc lại biên bản, những người có mặt đồng ý về nội dung biên bản, không có ý kiến gì khác.

**Đại diện Ban QLDA tỉnh**

  
*Trần Ngọc Hùng*

**Đại diện UBND xã**

  
**KT. CHỦ TỊCH  
PHÓ CHỦ TỊCH**  
**Nguyễn Hữu Thọ**  
**Đại diện tư vấn**  
*S. Hoang Lan*  
*Vũ Hoàng Lan*

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Đã.V.inh....., ngày 6..tháng..8..năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP  
CÁC TỈNH MIỀN TRUNG - KHOẢN VAY BÓ SUNG  
**BIÊN BẢN HỢP THAM VẤN CỘNG ĐỒNG**

Về các chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

Tên tiểu dự án: Cải tạo kênh cấp kinh Chính Bắc  
Xã/p. Đã.Vinh....., huyện Đ. Phan Rang - Tháp Chàm tỉnh Ninh Thuận.

I. Thành phần tham dự:

- |   |  |
|---|--|
| - Ông/Bà <u>Nguyễn Hữu Thọ</u> .....      | Chức vụ <u>PC.T UBND phường</u> .....      |
| - Ông/Bà <u>Vũ Hoàng Lân</u> .....        | Chức vụ <u>Tư vấn N&amp;T Thuận</u>        |
| - Ông/Bà <u>Đặng Đức Chiến</u> .....      | Chức vụ <u>Tư vấn T-Đ.C</u> .....          |
| - Ông/Bà <u>Nguyễn Thị Mỹ Hoa</u> .....   | Chức vụ <u>CT Hộ phụ nữ</u> .....          |
| - Ông/Bà <u>Đặng Nguyễn Lưu Pân</u> ..... | Chức vụ <u>CB.KT. K&amp;S QLPA T&amp;Đ</u> |
| - Ông/Bà.....                             | Chức vụ.....                               |
| - Ông/Bà.....                             | Chức vụ.....                               |
- Đại diện những hộ bị ảnh hưởng ..... người, trong đó .....nữ, chiếm....(%) , Dân tộc thiểu số.....người, chiếm....%

II. Nội dung

2.1 Các nội dung phổ biến:

- Cung cấp các thông tin về dự án như địa điểm, quy mô, các thông số kỹ thuật cơ bản ....
- Chính sách an toàn của dự án bao gồm: Chính sách về giới và sự tham gia của cộng đồng; Kế hoạch hành động giới; Chính sách môi trường, Chính sách Tái định cư và kế hoạch phát triển người dân tộc thiểu số.

2.2 Tham vấn cộng đồng:

- Tham vấn các vấn đề giám sát và tham gia của cộng đồng trong các giai đoạn chuẩn bị, thực hiện, vận hành tiểu dự án, các vấn đề về giới và lồng ghép giới, nhóm dễ tổn thương, hộ bị ảnh hưởng nặng...

- Tham vấn các vấn đề về môi trường, tác động môi trường tiềm năng của dự án bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực;
- Tham vấn các vấn đề về tái định cư, các tác động dự kiến, quyền lợi của người bị ảnh hưởng, các biện pháp giảm thiểu tối đa nhằm có ít tác động nhất đến người bị ảnh hưởng.
- Tham vấn nhu cầu đào tạo của các hộ bị ảnh hưởng.

### III. Ý kiến thảo luận

#### III.1. Các vấn đề về giới, tham gia cộng đồng

- + Thuê nhân công địa phương làm việc trên công trường
- + Các trạm cấp nước nên xây dựng nước trên trạm bơm khi công tác bơm tưới phù hợp
- + Quản lý vật tư, vật liệu cẩn thận
- + Thời gian xả nước có thể ảnh hưởng đến nước ở sâu xuất
- + Đơn vị bên địa phương chịu trách nhiệm là các đơn vị nên có ảnh hưởng đến công tác xây dựng là xây dựng lại

#### III. 2. Các vấn đề về môi trường

- Ảnh hưởng từ giao thông nước thải công: chất cây cỏ, phát quang mặt bằng
- Giảm thiểu công: bụi, nước thải, rác thải, ảnh hưởng đến gthủy đi lại, cấp nước sản xuất
- Đơn vị bên địa phương có thể giám sát rác thải, tỷ lệ số hộ có nhà vệ sinh: 85%
- Chú ý đến vấn đề bụi lang an toàn b.lưu giữ và vận hành dự án xây dựng
- +) Đăng ký tạm thời

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

Cuộc họp các bên thống nhất và kết thúc vào lúc 17h ngày 6 tháng 8 năm 2014

**Đại diện cộng đồng**

*Wh*  
*LE AN HONG*

**Đại diện Ban QLDA tỉnh**



*Trần Ngọc Hưng*

**Đại diện UBND xã**



*Nguyễn Hữu Thọ*

**Đại diện tư vấn**

*Phước Chiến*

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Đ. Vinh..., ngày 6...tháng 8...năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG –  
KHOẢN VAY BỔ SUNG

**DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP**

(Tham vấn cộng đồng về chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số)

Tên tiểu dự án: Nâng cấp cải tạo kênh chính Bắc  
Xã: Đ. Vinh..., huyện: t.p. Phan Rang, tỉnh: Ninh Thuận.

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
1	Nguyễn Hữu Thọ	Nam	P.Đ. Vinh		
2	Lê Văn Hùng	Nam	v		
3	Đỗ Văn Hề	Nam	v		
4	Ngô Thị Mỹ Hoa	Nữ	v		
5	Phạm Thị Kim Xuyên	Nữ	v		
6	Ngô Văn Nghĩa	Nam	v		
7	Hoàng Quốc Tuệ	Nam	v		
8	Bùi Công Tiến	nam	v		
9	Đỗ Đăng Thế	nam	v		
10	Ngô Văn Bắc	Nam	v		
11	Bùi Công Tiến	nam	v		
12	Phan Tấn	nam	v		
13	Nguyễn Văn Hân	nam	v		
14	Đỗ Văn Hề	Nam	v		

**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú

**Đại diện cộng đồng**

*Wh*  
LÊ VĂN HỒNG

**Đại diện UBND xã**

KT. CHỦ TỊCH  
PHÓ CHỦ TỊCH  


**Đại diện Ban QLDA tỉnh**

  
KT. GIÁM ĐỐC  
*Trần Ngọc Hùng*

**Nguyễn Hữu Thọ**  
Đại diện tư vấn

*Hoàng Lan*  
*Vũ Hoàng Lan*



**Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)**

*Lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, NinhThuan Province  
Integrated Rural Development in Central Provinces Project*

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**Photos of public consultation meeting**



**Photo13:Public consultation in Do Vinh ward**



**Photo14: Public consultation in Nhon Son commune**

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**Annex 3: Environmental monitoring forms**Environmental Compliance Monitoring Form for Construction PackagePart A: General Project Information

Subproject Name: \_\_\_\_\_

SIR Code: \_\_\_\_\_ Subproject Package #: \_\_\_\_\_ Activity Sector: \_\_\_\_\_

Province: \_\_\_\_\_ Districts: \_\_\_\_\_

Design and Supervision Consultant Firm: \_\_\_\_\_

Construction Company Name: \_\_\_\_\_ Contract Date: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Contract Duration (days) \_\_\_\_\_

Person Responsible: \_\_\_\_\_ Phone \_\_\_\_\_

PPMU EMO: \_\_\_\_\_ Phone \_\_\_\_\_

Part B: Monitoring checklist**Performance Indicator 1. Design and Preparations**

The PPMU to complete 1-4 in conjunction with the subproject design consultant at the time the project is tendered.

Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
1. Have all UXO been cleared prior to commencement of construction?			
2. Does the subproject design meet applicable engineering safety and public health standards?			
3. Have the resettlement provisions been disclosed to the affected communities and compensation made to affected persons or households?			
4. For the applicable subproject type:			
a. Roads, embankments, irrigation works and coastal protection: does the design provide cross drainage to prevent flooding?			
b. Markets: does the design provide washing facilities and toilets in the market area?			

The construction Supervision consultant (CSC) to complete 5-10 with the PPMU and construction contractor at the

time of start-up. Date of Monitoring: \_\_\_\_\_

5. Has the contractor prepared a Site EMP?			
6. Has the contractor posted a public notice regarding the nature, extent and cost of the project?			
7. Are locations for mixing plants sufficiently distant from houses, schools and hospitals?			
8. Are agreements in place with owners for temporary use of land for worker camps and construction yards?			
9. Have spoil disposal sites been selected in consultation with local authorities?			
10. Are official permits on record for quarry sites and borrow pits?			
<b>Score (1-10; 10 total)</b>			(%)

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**Performance Indicator 2. Worker Provisions**

The CSC to complete 11-16 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
11. Were local authorities consulted in the planning for the location of construction worker housing?			
12. Are supervisors or other site personnel trained in basic first aid emergency response measures?			
13. Are first aid kits readily available to workers at the job site along with instructions for use?			
14. Has the contractor or Inspector from the Department of Health undertaken an awareness program for communicable diseases/HIV-AIDS?			
15. Has the contractor provided safety equipment (hard hats, ear plugs, dust masks, safety boots and glasses) to workers and training in use?			
16. Are construction camps equipped with adequate water supply, sanitary toilets, washing facilities and facilities for waste collection and storage?			
<b>Score (11-16; 6 total)</b>			(%)

**Performance Indicator 3. Biodiversity**

The CSC should complete 17-21 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
17. Does the project avoid encroaching on natural forests or wetlands?			
18. Does the project avoid adverse effects on flow of natural streams and water quality?			
19. Are worker camps located outside of forested areas and has the contractor restricted access of workers to forests, fishing and hunting?			
20. Does the contractor obtain fill materials only from pre-existing quarries, or from borrow pits within the strict limits of the construction zone?			
21. For irrigation sector projects, are effects on agricultural biodiversity limited through use of integrated pest management?			
<b>Score (17-21; 5 total)</b>			(%)

**Performance Indicator 4. Community Based Monitoring**

The CSC to complete 22 and 23 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
22. Has the contractor posted a public notice regarding complaints from the community?			
23. Has there been a public consultation regarding construction, environmental impact, and the community complaints system?			
<b>Score (22-23; 2 total)</b>			(%)

Outcome of Public Consultation:

Date: \_\_\_\_\_ Location: \_\_\_\_\_

Topics covered in presentation: \_\_\_\_\_

Comments from Attendees:

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**Performance Indicator 5. Community Values and Safety**

Items 24 – 35 should be inspected quarterly. Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
24. Is temporary access provided to adjacent properties as needed?			
25. Is permanent access to adjacent properties reinstated on completion of a segment of work?			
26. Are construction hours adjusted around houses, hospitals and schools to minimize disturbance?			
27. Does the contractor limit the scope of construction in progress to minimize community impacts?			
28. Are physical impacts on public infrastructure and service disruption minimized?			
29. Are materials transported on approved haul routes?			
30. Are construction equipments maintained in good condition?			
31. Do vehicles operate within legal speed limits?			
32. Are material loads traveling on public routes covered?			
33. Is dust suppressed by watering exposed surfaces?			
34. Has the contractor installed signs and lighting in vicinity of works on public roads?			
35. Is access to the construction site restricted to the public?			
<b>Score (24-35; 12 total)</b>			(%)

**Performance Indicator 6. Hydrology/Water Pollution**

Items 36 – 43 should be inspected quarterly. Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
36. Are construction camps maintained in a clean and hygienic condition?			
37. Are oil, fuel and chemicals stored in enclosed areas (dyked or covered)?			
38. Is discharge of wastewater into water bodies used for water supply avoided?			
39. Is clearing activity suspended during rains?			
40. Does the contractor prevent discharge of concrete trucks to waterways?			
41. Have existing drainage patterns been maintained during construction?			
42. Are areas of standing water in the construction area drained and backfilled?			
43. Are sediment controls installed upslope of waterways?			
<b>Score (36-43; 8 total)</b>			(%)

**Performance Indicator 7. Project Completion**

Items 44 – 50 should be inspected prior to finalizing the construction works.

Date of Monitoring: \_\_\_\_\_

	Yes	No	Remarks
44. Have drainage fixtures, curbs, road shoulders and ditch slopes been finished out to prevent hazard to the public during use?			
45. Are ground surfaces in the project area graded to prevent water from collecting?			
46. Have all construction debris, tree cuttings, excess dirt, rubble and scrap been removed from the construction zone?			
47. Have all pits been filled in and graded to drain, underground tanks (including septic tanks) removed and holes backfilled?			
48. Are all waste products removed from the construction site, equipment yards and worker camps, including oil waste, scrap materials and equipment, building materials and domestic waste?			
49. Have all points of access (drives, walks) and utilities (water supply, power, communications) to public and private property been restored to original condition?			
50. Have all complaints by the local community and individuals been resolved by the Contractor?			
<b>Score (44-50; 7 total)</b>			(%)

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Performance Tracking

Performance Tracking consists of three sections:

- a. Performance Follow-up, where performance shortfalls noted in prior monitoring are listed and checked against current monitoring results.
- b. Community Complaints, where issues raised by the affected community are registered, tracked and outcomes recorded.
- c. Performance Indicator Results, where environmental performance against indicators are recorded.

**Section 1: Performance Follow-up**

Column 1 Performance variable (#) / Date Observed	Column 2 Reason for negative rating	Column 3 Was agency responsible notified? / Date	Column 4 Was problem corrected before next monitoring?	Column 5 Was performance indicator adjusted?

**Section 2: Community Complaints**

Column 1 Person Registering Complaint / Date	Column 2 Summary of Complaint	Column 3 Was agency responsible notified? / Date	Column 4 Was problem corrected before next monitoring?	Column 5 Was Person satisfied with Action?

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**Section 3: Performance Indicator Results**

Project Name: \_\_\_\_\_ SIR No.: \_\_\_\_\_ Package #:  
# \_\_\_\_\_ Province: \_\_\_\_\_

Project Start Date: \_\_\_\_\_

	Startup	Rev.	Q1	Q2	Q3	Q4	Average	Completion	Rev.	Final
Recording Date:										
1. Design and Preparations										
2. Worker Provisions										
3. Biodiversity										
4. Community Based Monitoring										
5. Community Values / Safety										
6. Hydrology/Water Pollution										
7. Project Completion										

Submittal Date: \_\_\_\_\_ For Calendar Quarter: \_\_\_\_\_

Inspector: \_\_\_\_\_

(Signature)

**Annex 4:**

**Environmental mitigation measure to include into bid documents**

**Subproject of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system subproject, Ninh Thuan Province**

Sub-project Activity	Potential impacts	Proposed Mitigation Measure
Earthworks  Concrete embankment  Waste and material transportation	Noise and vibration generation	<ul style="list-style-type: none"> <li>▪ Use modern and new construction machines and equipment to meet standards of exhaust, noise, and vibration as regulated by the Government. The Contractor needs to submit the Engineer documents proving that all construction vehicles, equipment, and machines are checked and meet requirements concerning noise and vibration generation of the current Vietnam standards as QCVN 26: 2010 for noise level and QCVN 27:2010 for vibration emitted by construction works;</li> <li>▪ All noise and vibration generation activities shall be restricted to the hours of 22h – 6h and not to be undertaken on Sundays or public holidays at the location nearby residential area such as: Residential areas in Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai communes.</li> <li>▪ Regularly maintenance of construction machines.</li> <li>▪ Provision noise protection equipment for worker;</li> <li>▪ In case that, noise generation equipment need to run during night time and holiday time nearby the above sensitive objects, the detail schedule will be considered and approved by SC before could be applied.</li> <li>▪ Local communities must be informed about construction schedules and time through informal public consultation or any local people meetings and notice board;</li> <li>▪ Strictly implementing noise control measures as noted above through sampling and taking adequate corrective actions if needed</li> </ul>
	Dust and exhaust generation	<ul style="list-style-type: none"> <li>▪ All excavated soil should be reused for levelling low areas where applicable such as excavated soil could be used for levelling existing sites for construction of access road surface.</li> <li>▪ Excavation at site will be watered to maintain certain moisture levels, and to prevent or minimize dust dispersion. The watering activities have been proposed at least one per day during dry season in the residential areas, such as residential area in Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai communes.</li> <li>▪ The construction machineries and equipment have to comply with Decision No. 249/2005/QĐ-TTg dated 10/10/2005 of Prime minister, Regulation on Emission roadmap for road transportation vehicles</li> <li>▪ Cover the material storage, setting up appropriate of mobilize material to the site to ensure that material will not obstruct at the site and release dust;</li> <li>▪ All material/waste storage shall be located at least 50 meters from any households and sensitive areas as mentioned above.</li> <li>▪ Trucks carrying construction waste are covered. All trucks used should have well fitted bodies and not be overtopped in loading to avoid soil scattering. Excavated sludge will be transported by</li> </ul>

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Sub-project Activity	Potential impacts	Proposed Mitigation Measure
		<p>specialized vehicles.</p> <ul style="list-style-type: none"> <li>▪ Speeds shall be limited when the trucks pass residential areas to constrain dust flying in the wind which affect health and daily activities of the people living along the roads. The certain section route will be identified by SPC. Speed limitation signs shall be adequately installed within construction site and its regulation shall be reminded to each driver by contractor.</li> <li>▪ Soil scattered on the paved road and public road shall be removed immediately.</li> </ul>
<p>Sludge excavation, Worker camp establishment, Waste generation</p>	<p>Odour generation and in-sanitation condition</p>	<ul style="list-style-type: none"> <li>▪ Excavation activities must be carefully scheduled to avoid the rainy season in order to ensure drainage of runoff water as well as sanitation for both local residents and workers;</li> <li>▪ It is strong recommended that any intervention actions on the channels, it should be dewatered and dried before implementing excavation activities to reduce odour generation and in-sanitation condition and avoid polluting surface water quality.</li> <li>▪ Construction waste need to be transported by adequate manners to use for levelling purpose at hollow areas along main canal in Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai communes.</li> <li>▪ Domestic waste and garbage from construction site will be collected by hygienic manner. Provide dustbins at work site.</li> <li>▪ Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited.</li> <li>▪ Burning of construction and domestic wastes shall be prohibited.</li> <li>▪ Toxic waste, if any, need to be collected, transported and treated according to the Circular No. 12/2011-BTNMT dated on 14/04/2011 of MONRE.</li> <li>▪ Excavated sludge will be transported by specialized vehicles to avoid the leaking out of sludge on the transport routes.</li> <li>▪ Before the construction activities completed, contractors have to carry out site clearance and environmental recovery, such as: <ul style="list-style-type: none"> <li>+ Transport of all unused materials from the site;</li> <li>+ Remove all construction machine and equipment, temporary facilities, worksites;</li> <li>+ Environmental recovery at the site such as provision of green trees, grass in both construction sites and disposal location in Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai communes.</li> </ul> </li> </ul>
<p>Excavate activities and worker camp establish on sites...</p>	<p>Water quality impacts</p>	<ul style="list-style-type: none"> <li>▪ Worksite, camps, material storage areas and load/unload construction material/waste activities must be located far from watercourse to ensure that materials will not be disposed into water,</li> <li>▪ Excavation activities of drain items must be scheduled to avoid rainy to reduce suspended matters in runoff water entering the surrounding water bodies and existing canals;</li> <li>▪ Provide adequate facilities in the site including latrines, holding areas and garbage cans. Waste from latrines will be collected and treated properly through an economic contract with local environmental co-operatives/companies.</li> <li>▪ 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.</li> <li>▪ The placement of washing instruments/vehicles next to the water bodies, existing canals (identified in Water quality impact section)</li> </ul>



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Sub-project Activity	Potential impacts	Proposed Mitigation Measure
		<p>will not allowed avoiding the leaching of waste, sludge, soil and oil contaminated water and maintenance activities will be banned on the sites in all construction drains;</p> <ul style="list-style-type: none"> <li>▪ Equipping the dustbins and mobility septic tanks to work sites ((it is proposed that there will be 1 dustbin and 1 mobility septic tank for each site )</li> </ul>
Inappropriate soil pit practices and concrete station operation	Soil erosion, vegetation clearance and run off water at soil pit	<ul style="list-style-type: none"> <li>- Prioritize the use of existing soil pit sites with suitable materials and update the list of soil pit monthly and report to PPMU and minimize impacts on other local resources;</li> <li>- Procure materials only from DONRE authorized soil pit and borrow sites;</li> <li>- Extraction of sand and gravel in river beds shall be prohibited except: (i) where this is no technically and economically feasible alternatives and (ii) provided specific mitigation measures are implemented to minimize impact on river morphology, water quality (e.g., turbidity) and aquatic ecosystems (e.g., reduced extraction during fish spawning period);</li> <li>- Checking the environmental protection commitment documents of soil pit, asphalt concrete stations since the Project will purchased construction material and hot concrete from these areas;</li> <li>- Monitoring the implementation of environmental protection measures at the soil pit and concrete stations;</li> <li>- Supervision the responsibility of environmental recovery activities at the soil pit areas and concrete stations.</li> </ul>
Inappropriate construction waste management	Sludge and waste water spreading to surrounding cultivation area as well as air pollution to ambient environment	<ul style="list-style-type: none"> <li>▪ All solid waste should be reused for levelling low areas where applicable;</li> <li>▪ Construction waste shall to be transported by adequate manners to places under permission from Commune authorities of Nhon Son, Do Vinh, Thanh Hai, Ho Hai, Xuan Hai and dumped at local peoples gardens</li> <li>▪ 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 ;</li> <li>▪ Domestic waste and garbage from worker camps need to be collected by hygienic manner through survive provision of Ninh Thuan environmental co-operative;</li> <li>▪ Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited;</li> <li>▪ Burning of construction and domestic wastes shall be prohibited;</li> <li>▪ Toxic waste, if any, need to be collected, transported and treated according to Circular No. 12/2011-BTNMT dated on 14/04/2011 of MONRE</li> <li>▪ Before construction is completed, the contractor will move all construction wastes and unused materials from the site;</li> <li>▪ Providing environmental protection measures at the soil disposal location include levelling, temporary drainage during rainy time, boundary edge provision, plantation and environmental recovery.</li> </ul>
Use of hazardous substances and	Air, soil and water	<ul style="list-style-type: none"> <li>▪ The storage area for all hazardous substances are located away from any water bodies in the project area such as irrigation</li> </ul>

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Sub-project Activity	Potential impacts	Proposed Mitigation Measure
hazardous waste disposal	contamination	<p>canals, ponds... to avoid the leakage to water bodies</p> <ul style="list-style-type: none"> <li>▪ Ensure that safe storage of fuel, other hazardous substances are agreed by PMU and have necessary approval/permit from DONRE and local authorities;</li> <li>▪ Equipment/vehicle maintenance and refuelling areas will be confined to areas in construction sites designed to contain spilled lubricants and fuels;</li> <li>▪ Fuel and other hazardous substances shall be stored in areas provided with roof as stated in TCVN 5507:2002- <i>Hazardous chemicals – Code of practice for safety in production, commerce, use, handling and transportation</i>;</li> <li>▪ Segregate hazardous wastes (oily wastes, fuel drums) and ensure that storage, transport and disposal shall not cause pollution;</li> <li>▪ Ensure all storage containers are in good condition with proper labelling;</li> <li>▪ Collected, transported and treated by contract with company which has a work permit for treating hazardous waste disposal according to the Circular No. 12/2011/TT-BTNMT on 14 April, 2011 of MONRE.</li> </ul>
Transport vehicle activities Construction machinery operation Worker concentration	Community Disturbance and Traffic safety	<ul style="list-style-type: none"> <li>▪ Place sign boards near construction sites to direct traffic means to slow down at the section close to Work site :</li> <li>▪ Regulating the transport vehicle speed will not be over 20km when passing above areas;</li> <li>▪ Construction materials shall be stored tidily at the required locations.</li> <li>▪ Inform the community about construction schedule through informal public consultation or any local people meetings and notice board;</li> </ul>
.Poor management at worksites	Health and safety for the construction workers and the nearby community	<ul style="list-style-type: none"> <li>▪ Constructor need to work with CS, PMU to establish labour safe regulations on the sites required by law and by good engineering practice, which include: electric safety, operating equipment - general safety requirements, general safety requirements.</li> <li>▪ Workers shall be provided with appropriate personal protective equipment (PPE) such as safety shoes, hard hats, safety glasses, ear plugs, gloves, etc. at no cost to the employee..</li> <li>▪ A first aid kit will be provided at each construction site to ensure patients can receive first aid timely before transporting them to the medical station/hospital</li> <li>▪ It is mandatory for workers to attend training courses on labour safety before they are recruited to work for the project;</li> <li>▪ Supervise period on compliance to labour safe measures of workers at project sites.</li> <li>▪ Contractors ensure to provide safe drinking water to workers for daily uses.</li> <li>▪ Construction site shall be provided with toilet/sanitation facilities</li> <li>▪ Contractor shall readily provide and maintain lights, protection fences, signboards and wardens where necessary as requested by the Engineer or local authorities.</li> </ul>
Excavation, transport activities	Impacts to public facilities	<ul style="list-style-type: none"> <li>▪ Obtain the agreement with local authorities in using the transport routes, intervening the canals and if any downgraded observations due to project activities have been found, the contractors have to fully compensate;</li> </ul>

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Sub-project Activity	Potential impacts	Proposed Mitigation Measure
		<ul style="list-style-type: none"> <li>▪ Providing the temporary irrigation canals or drainage canals during construction phases if any interventions will be made on these canals;</li> <li>▪ Consultation and obtain the agreement from local authorities and local peoples on replacement of all affected canals on the fields;</li> <li>▪ Record the status of the existing roads and canals before construction and make proper compensation for the damages if any.</li> <li>▪ All public facilities should be fully compensated as its origin after completion of construction works;</li> </ul>
Earthworks and excavation activities	Impacts on surrounding agricultural land and infrastructure	<ul style="list-style-type: none"> <li>▪ No construction materials and/or wastes fall into agricultural land;</li> <li>▪ Providing the temporary irrigation canals or drainage canals during construction phases if any interventions will be made on these canals to ensure the water flows on all cultivation areas;</li> <li>▪ Appropriate management of water pollution sources from construction activities to ensure that the construction will not pollute water and soil on all cultivation areas;</li> <li>▪ Reinstate road surface and fix up damages caused to irrigation canals, water supply/drainage canals;</li> <li>▪ All activities of contractor only allow within the acquired land areas.</li> </ul>
Construction activities Concentration of workers and equipment	Social disturbance	<ul style="list-style-type: none"> <li>▪ Excavated pond will be dewatered and fenced to reduce high risk for local peoples;</li> <li>▪ Construction materials shall be stored tidily at the required locations.</li> <li>▪ Install barriers (temporary fence) at construction areas to deter people access to the site.</li> <li>▪ The local people shall not be allowed in high-risk areas (excavation sites and areas where heavy equipment is in operation).</li> <li>▪ Remain the light during the night time on all construction sites.</li> <li>▪ Construction workers who are not local people must register temporary residents and obtain temporary residential certificate from local authority.</li> <li>▪ Educate workers on appropriate behaviour for interactions with local community and risks of communicable diseases</li> </ul>
Obstructed drainage water flow	Localized flooding and sanitation condition	<ul style="list-style-type: none"> <li>▪ Setting up appropriate construction schedule at the site to avoid rainy season, especially for excavation activities;</li> <li>▪ Provision supplemental temporary drainage plans in the construction site to ensure the quickly respond in case of heavy rain, other unforeseen drainage issues and avoid obstructing water in surrounding areas and construction sites;</li> <li>▪ Providing the temporary irrigation canals or drainage canals during construction phases if any interventions will be made on these canals to ensure the water flows;</li> <li>▪ Supplemental temporary drainage plans must be revised and approved by PMU, and Construction Supervision before construction works started.</li> </ul>
excavation activities and Lining &	Affect irrigation water supply system for	<ul style="list-style-type: none"> <li>▪ Construction of the canal and its management road should be implemented in dry season with application of construction and irrigation at same time.</li> </ul>

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Sub-project Activity	Potential impacts	Proposed Mitigation Measure
upgrading for the canal	agriculture production	<ul style="list-style-type: none"> <li>▪ The Contractor should coordinate with irrigation authority (Ninh Thuan Irrigation Work Exploitation Limited Company), commune’s irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done);</li> <li>▪ Commune’s irrigation staff, irrigation exploitation enterprise or relevant authorities should early inform households and contractor on water supply schedule so that they can make plan on their own initiative;</li> <li>▪ PPMU and the Contractor should pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to stop of water supply at cultivation area, etc</li> <li>▪ Proposed construction time: after harvesting: 25 April 2016 to 10 June 2016. Construction solution is construction time should be implemented at the time when irrigation activities are not done.</li> </ul>
All construction activities	Cultural heritage impacts	<ul style="list-style-type: none"> <li>▪ Where grave is found during construction, coordinate with local authorities to arrange for relocation and mapping the location of the graves before and after relocation;</li> <li>▪ Halt construction activities, protect the site and inform construction supervision for guidance if artifacts are found at construction site.</li> </ul>
Environmental recovery	Odour 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 sites</p> <p>Monitoring environmental recovery at:</p> <ul style="list-style-type: none"> <li>▪ Construction waste disposal location</li> <li>▪ Material soil pit and borrow areas</li> <li>▪ Working sites</li> </ul> <p>Reinstate and ensure good condition for any effected public facilitates.</p>

### **Annex 5: Data Source**

1. PPMU of Ninh Thuan province, Subproject Investment Report (SIR) of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system, August2014.
2. PPMU of Ninh Thuan province, Basic Design Explanation of lining the beginning section of northern main canal (from K0+500 to K10+00) and upgrading its management road of Nha Trinh - Lam Cam irrigation system, August2014.
3. Environmental Management Plan of upgrading the dike of northern bank of Dinhriver of Ninh Thuan province, October 2013.
4. Do VinhWard People's Committee, Annual Report on Social Economy, December 2013.
5. Nhon Son Commune People's Committee, Annual Report on Social Economy, December 2013.