Initial Environmental Examination

July 2016

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

SUBPROJECT: UPGRADING IRRIGATION/ DRAINAGE AND RURAL ROAD SYSTEM IN FLOODING–PRONE AREA OF LOC HA DISTRICT

Prepared by Central Project Management Unit – Agriculture Project Management Board - Ministry of Agriculture & Rural Development for the Asian Development Bank

CURRENCY EQUIVALENTS

(As of 20 May 2016)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	$0.0000449
$1.00	=	VND 22,275

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected persons
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
EPP	Environmental Protection Plan
DARD	Department of Agriculture and Rural Development
FPD	Forest Protection Department
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
IRDSPCP	Integrated Rural Development Sector 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
The Projects	The IRDSPCP – Additional Financing
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

2. 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 Française de Développement. 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.

3. 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.

4. 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 riverbank 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).

5. As part of the Project, "UPGRADING IRRIGATION/ DRAINAGE AND RURAL ROAD SYSTEM IN FLOODING-PRONE AREA OF LOC HA DISTRICT"subproject will be implemented at Tan Loc, Binh Loc, Thinh Loc, Hong Loc and An Loc communes - Loc Ha district, Ha Tinh province.

6. This Initial Environmental Examination document has been prepared to meet the environmental safeguards requirements of the ADB[1] and GOV[2]. The IEE contains the following information:

(i) Section 1 Introduction;

(ii) Section 2 contains a description of the subproject;

(iii) Section 3 contains a description of environmental conditions in the vicinity of the subproject;

(iv) Section 4 contains a describes potential environmental impacts of the subproject;

[1] ADB Safeguard Policy Statement (2009)

[2] Law on Environment Protection 2014; Decree 18/2015/ND-CP and Circular 27/2015/TT-BTNMT

(v) Section 5 contains the environmental management plan including mitigation measures, monitoring system and cost estimation for Environmental Monitoring System (EMS) implementation;

(vi) Section 6 contains activities description on community consultation and subproject disclosure;

(vii) 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
GENERAL INFORMATION	
Subproject Name	Upgrade irrigation/ drainage and rural road system in flooding-prone area of Loc Ha district
Subproject Type	Irrigation/ Drainage/ Rural transportation
Executing Agency	People's Committee of Ha Tinh Province
Sub-project owner	Department of Agriculture and Rural Development, Ha Tinh Province
Sub-project Management Unit	PPMU of IRDSPCP, Ha Tinh Province
Address of PPMU's office	South of Cay bridge, Thach Trung commune, Ha Tinh City, Ha Tinh province
Name and Title of Head of Project owner	Mr Nguyen Van Duong Title: Director
Telephone, fax and email details of Project owner	Tel: 0393690336; FAX: 0393858921
Name of Environmental Officer of PPMU	Nguyen Hong Son
Telephone, fax and email details of PPMU Environmental Officer	0943678802, sonkhoa87@gmail.com
SUBPROJECT DESCRIPTION	
New project or rehabilitation project	Rehabilitation project
Surface water or groundwater source	Surface water source
Identification of water source	Upper Khe Hao; Lower Khe Hao; and Dong Ho reservoirs
Identification of drainage basin area	Upper Khe Hao reservoir: the capacity of Upper Khe Hao reservoir is 3.8 million m^3, which supplies water for 29,338 people in Thach Bang, Thach Kim, Thinh Loc communes with capacity of 4000 m^3/day and provide irrigation water through Lower Khe Hao reservoir. Lower Khe Hao reservoir: the capacity is 1.293 million m^3. It receives water from Upper Khe Hao reservoir and provides irrigation water for 228 ha (at design capacity) cultivation area of Tan Loc and Thinh Loc communes through 15.5 km irrigation canal. Dong Ho reservoir: the capacity is 1.271 million m^3. It provides irrigation water for 190 ha (at design capacity) cultivation area of Hong Loc and Binh Loc communes through 22.5 km irrigation canal. Hong Tan drainage canal (7 km in length) locate in Tan Loc commune, is the main drainage canal for Tan Loc, Hong Loc, Binh Loc and An Loc communes, Loc Ha district.
Type of Subproject	Repairing, upgrading reservoir and irrigation canals and rural road infrastructures
Purpose and needs of the subproject	The current/ design capacities of Khe Hao and Dong Ho irrigation systems are 64/ 228 ha and 92/ 190 ha respectively. The subproject will upgrade Lower Khe Hao reservoir and 9,466 m irrigation canal to

<table>
<tr><th>DATA ITEM</th><th>SUBPROJECT DATA</th></tr>
<tr><td></td><td>ensure the irrigation capacity, as in the design, of Khe Hao and Dong Ho reservoirs, increase agricultural productivity and income of local people.

Loi Ma – Thien Thinh and Tan Loc – Binh Loc are earth roads with the road surface width is varied from 3-6m. It makes dust in the dry season and slippery, muddy condition when it is raining, make many difficulties for the movement of local people especially people in Tan Loc commune must travel 5.3 km (instead of 2.5 km due to bad road condition) to reach the district market in Binh Loc commune.

Upgrade the drainage canals and transportation road will increase chance of access to rural infrastructure, minimize impacts from natural disasters likes drought and flood, support sustainable socio-economical development of 5 communes in Loc Ha district.</td></tr>
<tr><td>Components of the subproject</td><td>Sub-project will repair and upgrade existing reservoir and canals for irrigation and improving rural transportation by upgrading rural roads. Those activities expected to increase agricultural productivity and improve socio-economic living conditions for local peoples.

The details of components include:

a) Repairing and upgrading irrigation system of Lower Khe Hao reservoir, included ain weir, irrigation and drainage canals system;

b) Repairing and upgrading rural roads, included i) Tan Loc – Binh Loc inter-commune road to Village No.1 – An Loc commune, ii) Loi Ma – Thien Thinh road, and iii) Management road of Khe Hao reservoir</td></tr>
<tr><td>a) Repairing and upgrading irrigation and drainage system of Lower Khe Hao reservoir</td><td>- Lower Khe Hao reservoir: upgrade the main weir with L = 1,084 m and the auxiliary weir with L = 128 m. Level up the weirs from 7m to 7.4m and enlarge weirs surface to 5m. Improve the weir surface with 20-cm aggregate base. Width of Lower Khe Hao weir is varied from 1.9 to 4.1m. Construct new free flow spill way with pragmatic Ophicerop and two water intake culverts. Height of Lower Khe Hao weir: varied from 6.93 to 7.31 m and length of the main weir to be upgraded: 1084 m, length of the auxiliary weir to be upgraded:128m

- Number of intakes and outlets need to constructed: 02 will be constructed in Lower Khe Hao reservoir. The first culvert will be constructed at the main weir area, 7.7 m to the left of the old culvert. The second culvert will be constructed on the right side of spillway, under the auxiliary weir. Both water intake culverts will be constructed with dimension 0.8x1.0 m width and height. Culvert wall is steel-enforced concrete R_{b2}00, 30 cm in thickness. The slope ratio at the bottom is i=0.008;

- Irrigation canals: The existing canals are mainly earth canals. Subproject will concrete the irrigation canal system of Lower Khe Hao and Dong Ho Reservoir. Concrete 4,893 m irrigation canal of Khe Hao Irrigation System and 4,553 m irrigation canal of Dong Ho Irrigation System with R_b200 concrete, stone (1x2) cm. Improve the canal bank with concrete slab R_b200, 60x60 cm and 8 cm in thickness. The canal bed will be cover with geo-technical canvas.
<table>
<tr><th>Canal</th><th>Length (m)</th><th>Width (m)</th><th>Depth (m)</th></tr>
<tr><td colspan="4">Canals of Khe Hao Irrigation System</td></tr>
<tr><td>Canal after inlet</td><td>161.00</td><td>1.00</td><td>1.10</td></tr>
<tr><td>Canal no. 1</td><td>2,380.0</td><td>0.60</td><td>0.70</td></tr>
<tr><td>Canal no. 2</td><td>604.00</td><td>0.60</td><td>0.60</td></tr>
<tr><td>Canal no. 3</td><td>664.00</td><td>0.40</td><td>0.50</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>DATA ITEM</th><th>SUBPROJECT DATA</th></tr>
<tr><td></td><td>
<table>
<tr><td>Canal no. 4</td><td>374.00</td><td>0.40</td><td>0.40</td></tr>
<tr><td>Canal no. 5</td><td>534.00</td><td>0.40</td><td>0.50</td></tr>
<tr><td>Canal no. 6</td><td>780.00</td><td>0.50</td><td>0.60</td></tr>
<tr><td colspan="4">Canals of Dong Ho Irrigation System</td></tr>
<tr><td>Canal no. 1</td><td>1419.00</td><td>0.4</td><td>0.4</td></tr>
<tr><td>Canal no. 2</td><td>449.10</td><td>0.4</td><td>0.4</td></tr>
<tr><td>Canal no. 3</td><td>615.30</td><td>0.4</td><td>0.4</td></tr>
</table>
- Drainage canals: The current drainage canal system is mainly earth canal. Some parts have seriously degraded with sedimentation and canal bank erosion. Upgrade (i) 2,484 m Loi Ma – Cau Coc drainage canal, the start point connects with road crossing drainage culvert, the end point links with Dong Doi main drainage canal - part of Nghen River main canal system; (ii) 890 m Tan Loc – Binh Loc drainage canal. The start point connects with road crossing culvert (near Lu Temple), the end point links with Hong Tan main drainage canal - part of Nghen River main canal system. The canals will be upgraded in the following information:
<table>
<tr><th>Canal</th><th>Length (m)</th><th>Width (m)</th><th>Depth (m)</th></tr>
<tr><td>Dinh Lu – Cau Ngao</td><td>890</td><td>1.6</td><td>1.4</td></tr>
<tr><td>Loi Ma - Cau Coc</td><td>2484.50</td><td>1.2 - 1.4</td><td>1.2 - 1.4</td></tr>
</table>
Both canals system will be upgraded with trapezoid shape. Canal bank will be upgraded with mortar mixed & masonry R_v100, 25 cm in thick and the dimension (in average) is 1.4 x 1.5 m width and height
</td></tr>
<tr><td>b) Repairing and upgrading rural roads</td><td>Rural road: Upgrading the following items:
(i) Tan Loc – Binh Loc inter-commune road to Village No.1 – An Loc commune with the total length of 3,588.3 m to Rural Road Grade A (TCVN10380: 2014) with road surface of 5m, road foundation with of 6.5m, road side width of 2x0.75. Road surface material is cement concrete – 20 cm in thickness. The start point connects with bitumen road of Tan Loc commune (Dinh Lu) and the end point connects with the main path of No.1 hamlet, An Loc commune;
(ii) Loi Ma – Thien Thinh road with the total length of 2,324.7 m. The start point is the junction with concrete road to Lower Khe Hao reservoir, the end point connects with Thien Thinh road (Cau Coc) in Tan Loc commune;
(iii) Management road of Khe Hao reservoir with the total length of 1,490.2 m, which will be upgraded to rural road Grade B (TCVN10380: 2014) with surface of 3.5 m, foundation with of 5m, side width of 2x0.75. Road surface material is cemented concrete – 18 cm in thickness.
Both (ii) and (iii) will be upgraded to Rural Road Grade B (TCVN10380: 2014) with road surface of 3.5m, road foundation with of 5m, road side width of 2x0.75. Road surface material is cement concrete – 18 cm in thickness.</td></tr>
<tr><td>Supplementary items</td><td>Construct new free flow spill way with pragmatic Ophicerop and two water intake culverts in the lower Khe Hao reservoir.
Spill way: Spill threshold elevation is 5.75 m, design height is 0.443 m</td></tr>
</table>

DATA ITEM	SUBPROJECT DATA
	and length is 40 m
CONSTRUCTION ACTIVITIES[3]	
Commencement date (month/year)	Quarter IV 2016 (as expected)
Completion date (month/year)	The 31st of October 2018 (24 months - as expected)
Number of workers	About 300 workers
Necessary camps (Yes/No)	Yes, 01 main camp and 05 temporary camps along the proposed canals and roads
Construction in rainy season (Yes/No)	Yes (the construction will also be implemented in the dry days in the rainy season to meet the deadline)
Concrete mixing plant	No concrete mixing plant, but 250-500-litre mobile concrete mixing equipment could be used. These mobile plants need to have legal operation licenses and the contractor will discuss with local authorities before mobilize the plants to the construction site.
Location and area of borrow area or description of material source	Filled soil will be taken from Tung Son borrow pit, Tung Loc commune and Hong Loc borrow pit, Hong Loc commune, those are located at a distance of 7 km from the subproject site. These borrow pits have the operation licensed from Ha Tinh DONRE and have been used as soil sources for construction material in Loc Ha district. The contractor will work with Tung Loc and Hong Loc CPCs before the construction commencement. Stone will be purchased at construction material shop in Can Loc town (sources from quarry of Hong Linh town). It is far from the subproject area about 8 Km; Sand will also be purchased at construction material shop in Can Loc town (sources from mine in Vuong Loc commune, Can Loc district). Other material such as steel, cement will be purchased at Construction Material Shops in Loc Ha town located 7 km from the subproject site.
Method on management and balance of excavated soil/surplus soil	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 levelling the canal safety corridor; Cutting soil: 23,596 m^3; Filling soil: 30,653m^3; Spoiled soil: 18,741m^3; About 20,057 m^3 of cutting soil will be reused to fill up the canal's banks and 10,267 m^3 of filling soil will be taken from Tung Son and Hong Loc borrow pits. Excavated soil that could not be reused will be transfer to Loc Ha landfill – about 5 km from the subproject site. This is the landfill of Loc Ha district with the total area of 5ha. The landfill start operates in January 2015 with the permission from Ha Tinh PPC. The contractor will work with Loc Ha DPC before the construction commencement for a dumping agreement.

[3] Source: Basic Design Explanation of Lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district subproject, Ha Tinh Province, 2014

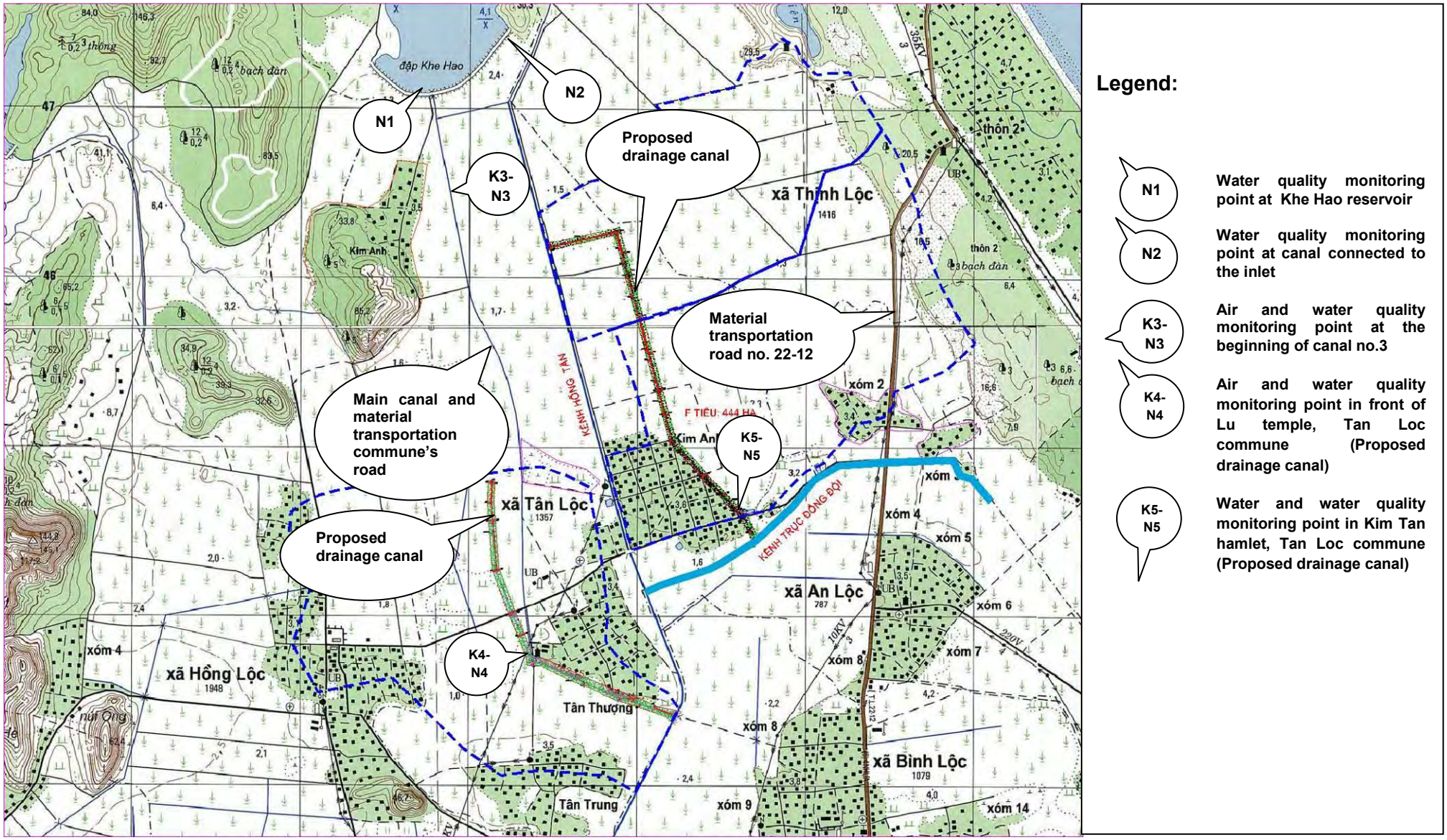
<table>
<tr><th>DATA ITEM</th><th>SUBPROJECT DATA</th></tr>
<tr><td>Type and approximate quantity of raw construction materials</td><td>Demand of raw construction material could be summarised as the below table, since the sources of each type of material have been pointed above
<table>
<tr><th>Items</th><th>Unit</th><th>Quantity</th></tr>
<tr><td>Filling soil</td><td>m^3</td><td>30,653</td></tr>
<tr><td>Dry masonry</td><td>m^3</td><td>1257</td></tr>
<tr><td>Construction stone</td><td>m^3</td><td>8020</td></tr>
<tr><td>Macadam</td><td>m^3</td><td>8522</td></tr>
<tr><td>Concrete</td><td>m^3</td><td>5748</td></tr>
<tr><td>Concrete with steel</td><td>m^3</td><td>4277</td></tr>
<tr><td>Steel</td><td>Ton</td><td>128</td></tr>
</table></td></tr>
<tr><td>Quantity of solid waste generated from construction (calculated m^3/month)
- Soil, sand, debris, etc.
- Domestic waste</td><td>Estimated soil and sludge volume: 1562 m^3/month
Domestic waste: 0.5kg/person/day, in total: 300 x 0.5 kg x 30 = 4,500 kg/month</td></tr>
<tr><td>Number and conditions construction vehicles and equipment</td><td>The construction equipment/ machines could be listed ad 03 bulldozers (110Cv); 06 excavators; 03 compactors; 06 jumping jack compactors (2.3 kw); more than 6 tip trucks (self-dump – 14m^3), 26 mobile concrete mixing machines (250-500l); 06 water trucks. All vehicles and machines are in good conditions and have registration of periodical verification</td></tr>
<tr><td colspan="2">***OPERATION AND MAINTENANCE ACTIVITIES***[4]</td></tr>
<tr><td>Water discharge at the beginning section of the canal: (m^3/s)</td><td>
<table>
<tr><th>Canal</th><th>Unit</th><th>Discharge (Q)</th></tr>
<tr><td>Canal after inlet</td><td>m/s</td><td>0.30</td></tr>
<tr><td>Canal no. 1</td><td>m/s</td><td>0.09</td></tr>
<tr><td>Canal no. 2</td><td>m/s</td><td>0.04</td></tr>
<tr><td>Canal no. 3</td><td>m/s</td><td>0.04</td></tr>
<tr><td>Canal no. 4</td><td>m/s</td><td>0.03</td></tr>
<tr><td>Canal no. 5</td><td>m/s</td><td>0.03</td></tr>
<tr><td>Canal no. 6</td><td>m/s</td><td>0.07</td></tr>
</table></td></tr>
<tr><td>Irrigation area (ha)</td><td>Current capacity/ expected capacity (cultivation area in hectare): Khe Hao irrigational system is 64/228 – 28% and Dong Ho irrigation system is 92/190 – 49%</td></tr>
<tr><td>Operation, management and maintenance Unit</td><td>Northern Ha Tinh Irrigation One Member Limited Company is responsible for operation, management and maintenance the reservoirs and irrigation system after completion of the work</td></tr>
<tr><td>Water treatment process</td><td>No. Water in Lower Khe Hao reservoir has been used only for irrigation purpose without sign of water pollution. There has not been any water treatment system in the subproject area.</td></tr>
<tr><td>Descriptions of periodical maintenance activities</td><td>**Annual maintenance:** Annual maintenance activities include greasing machines, replacing broken minor parts of machines such as penstocks; dredging sludge of canals, culverts, spillways; repairing</td></tr>
</table>

[4] Source: SIP of lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district, 2014

DATA ITEM	SUBPROJECT DATA	
	banks of canals; removing rubbish in the canals, culverts, troughs, spillways etc. repairing minor breaks of canal slopes, culverts, spillways and treating extrusion joints, penetration through animal holes and nests of white ants. Annual average cost for Operation and Maintenance Activities estimated 1,513,842,493 VND **Periodic maintenance (every 7 years):** 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.	
RESETTLEMENT AND LAND ACQUISITION [5]		
Affected households	0 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.	
Total land area to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Agricultural land area to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Forestry land area to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Aqua cultural land to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Residential land to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Garden land to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Other land to be acquired (ha)	Temporary= 0 m^2	Permanent = 0 m^2
Affected assets	None	None
SUBPROJECT COST		
Total subproject cost (VND and $USD)	79,623,946,493 VND/ 3,791,616.43 USD (1 USD = 21000 VND)	

[5] This data is obtained from Resettlement Plan of the subproject

Figure 1: Map of Subproject and Surrounding Area



3. DESCRIPTION OF EXISTING ENVIRONMENT

Table 2 - Environmental baseline

DATA ITEM	SUBPROJECT DATA
PROJECT LOCATION	
Commune(s):	Tan Loc, Thinh Loc, An Loc, Hong Loc and Binh Loc
District:	Loc Ha
Province:	Ha Tinh
Geographic location:	From 18°28'31'' N ÷ 18°30'29'' N. From 105°50'38'' E ÷ 106°52'03'' E.
PHYSICAL ENVIRONMENT CONDITIONS	
Air quality, noise and vibration	The ambient air quality in the subproject area is still in good quality and showed no trace of pollution. According to the ambient air quality monitoring for environment impact assessment of the subproject (which need to follow government requirement), CO, NO_2, SO_2 and dust concentration are all within the allowed level of Vietnamese standard QCVN 05:2013/BTNMT on ambient air quality. Noise level varied from 54 – 58 dBA, lower than the permitted level of 70 dBA of QCVN 26: 2010/BTNMT on noise level[6]. The monitoring locations are near Lu temple in Tan Loc commune; Hong Tan secondary school; canal No.3 in Kim Tan village, Tan Loc commune and Kim Tan inter-village road in Tan Loc commune.
Climate and natural disasters	The subproject area has a monsoon tropical climate, divided into two distinct seasons. The rainy season lasts from April to October; average temperature fluctuates above 25°C accompanied by heavy rain. The dry season is from November to March, average temperature fluctuates below 23°C. The average annual precipitation is 2661 mm. September is usually the month with the highest precipitation of the year (reached up 1450 mm). The meteorology-hydrology data of Ha Tinh Centre indicate there are 4-5 storms annually in the subproject area with heavy rainfall. However, there are not so many storms happen in the subproject in the recent years. The nearest storm with large impact on the district was happened in September 2013 with 216 houses with roof off; flooded 203 houses; 14.25 km canal has been broken; the inundation areas were 250 ha of rice field, 110 ha of sweet potato, 120 ha of vegetables and 707 ha salt production.
Topography and soils	Subproject is locate in the narrow coastal plain so the area is generally flat, with elevations ranging from 10.0m to 50.0m and the lowest point is 2.5m. The soils are mainly silt and sand.
Waterbodies	The main water bodies in the subproject area are upper and lower Khe Hao reservoirs, Dong Ho reservoir and Nghen river. There are also water rice field distribute separated in the subproject area. Water from small streams in Hong Linh mountain area discharge into upper Khe Hao reservoir, which are using for domestic water supply purpose and providing water for lower Khe Hao reservoir for irrigation purpose. Dong Ho reservoir also receives water from streams in Hong Linh mountain area before irrigating through the canal system. There are some drainage systems in the subproject area. Water flow

[6] The monitoring has been implemented in 25 May 2016 by Irrigation Science and Technical Implementation Institute

DATA ITEM	SUBPROJECT DATA
	downstream then discharge into Nghen River (part of La River) before flow to the sea. Water of the river and canals is mainly used for agriculture purpose.
Underground water	According to the underground water monitoring result for environment impact assessment of the subproject, some main parameters like TSS, Cl, COD, As, Fe, are all within the allowed level of Vietnamese Standard QCVN 09:2008/BTNMT on underground water quality. However, E.coli and Coliform parameters are all higher than the allowed level with E.coli from 3 – 6 in compare with QCVN 09:2008/BTNMT and Coliform is 8 -13 in compare with QCVN 09:2008/BTNMT showed that underground water in the subproject area has been polluted with microbiology. The sampling locations are drill wells in living area of Hong Tan secondary school; Lu temple, Tan Loc commune; household near Kim Tan inter-village road in Tan Loc commune; near Canal No.3 in Tan Loc commune. [7]
Water quality	According to the surface water monitoring result for environment impact assessment of the subproject, some main parameters like DO, Cl, BOD_5, As, Fe, are all within the allowed level of Vietnamese Standard QCVN 08:2008/BTNMT on surface water quality. However, TSS parameters are higher than the allowed level at all 5 monitoring locations (varied from 55.5 – 62.6 mg/l in compare with 50 under QCVN 08:2008/BTNMT). The sampling locations are Lower Khe Hao reservoir in Tan Loc commune (2 locations); irrigation canal in Tan Thuong, Tan Loc; and drainage canals in Tan Thuong, Tan Loc commune (footnote 7).
Flooding and drought	This area always has been in state of inundation, 2 times per year (mainly in rainy season from August to Oct). The nearest big flood was happened in October 2010 with 3230 households in 9 over 13 communes of Loc Ha district have suffered from inundation.
Terrestrial flora and fauna	Terrestrial flora could be mainly rice field, corn, bean and vegetables gardens in residential areas. Terrestrial fauna are cow, pig, chicken, ducks, etc. None of terrestrial flora and fauna in subproject area is listed in Vietnam's Red Data Book.
Protected areas	In subproject area, there is no historical or historical vestiges or protected area;
Environmental sensitive points	- Residential area are Kim Tan and Tan Thuong hamlets, Tan Loc commune, An Loc commune, Loc Ha district; - Hong Tan primary and secondary school (far from the construction site 100 m); - Tan Loc, An Loc primary school, Tan Loc Kindergarten - Lu temple (far from the construction site about 30 m) - Loc Ha General Hospital (located road side of Road No.22/12) - My Loc Church – 100m from construction.
SOCIAL ENVIRONMENT CONDITIONS	
UXO	The proposed canal will be based on the existing route and during management and exploitation process so the potential for UXO is low. However, Ha Tinh PPMU has signed contract with No.319 UXO Clearance One Member Limited Company under Military Corporation

[7] The monitoring has been implemented in 25 May 2016 by Irrigation Science and Technical Implementation Institute

<table>
<tr><th>DATA ITEM</th><th>SUBPROJECT DATA</th></tr>
<tr><td></td><td>No.319 for UXO clearance;</td></tr>
<tr><td>Land use</td><td>Agriculture land is 1920 ha, and other land is 1729 ha[8].Land is mainly used for agriculture development. Agriculture: mainly plant rice 2 crops/year;</td></tr>
<tr><td>Nearest residential land</td><td>Residential areas are located along the canal and material transportation roads including Kim Tan and Tan Thuong hamlets, Tan Loc commune and An Loc commune. The distance between nearest residential houses and the proposed canal ranges from 20m to 200m;</td></tr>
<tr><td>Rural infrastructure</td><td>Rural infrastructure works in subproject including the low-voltage electric lines running along Road No.22/12 road and other commune's road, the existing secondary and primary schools; kindergartens; Loc Ha general hospital, medical centres, public houses at communes/districts, etc. These infrastructures could be impact from construction as well as material transportation activities.</td></tr>
<tr><td>Access to water supply & sanitation and solid waste management</td><td>Garbage is collected once a week in Tan Loc commune and Thinh commune. Garbage is transported to Loc Ha landfill located in a distance of 5 km from the construction sites.

There is 60% of people who access to sanitation latrines. Domestic wastewater discharges on the ground or to ponds, lakes and low positions. Households in the subproject area use storm water for domestic purposes.</td></tr>
<tr><td>Agriculture</td><td>Agriculture: mainly wet rice, bean, corn, vegetable;</td></tr>
<tr><td>Population</td><td>The total population of the 5 beneficiary communes are 29,458 people with the population density are varied 427-1057 persons/km^2 [9]. The population of each commune is listed below:

<table><tr><td>An Loc</td><td>Binh Loc</td><td>Hong Loc</td><td>Tan Loc</td><td>Thinh Loc</td></tr><tr><td>3393</td><td>4765</td><td>8582</td><td>5909</td><td>6809</td></tr></table></td></tr>
<tr><td>Ethnic minorities</td><td>There are no ethnic minority groups living in the subproject area.</td></tr>
<tr><td>Livelihoods</td><td>+ In 2013, the main employment of the Loc Ha District is agriculture and handicraft production, occupying 64.32% of the local population. Trade and business shared 23.7% and industrial and construction was 11.8%.

+ The average income is VND 24 million/person/year;

+ The poverty rate of Tan Loc, Binh Loc, Hong Loc, An Loc and Thinh Loc communes are: 14.5%; 14.2%; 15.2%; 14.8%; and 16.2% respectively (following the new poverty line made by the Government)</td></tr>
<tr><td>Physical and cultural heritage</td><td>There is no cultural heritage or preservation area in the subproject region.</td></tr>
<tr><td>Public health</td><td>Diseases which often occur in the summer are diarrhoea, petechial fever

Besides, there are respiratory diseases like sore throat, sinusitis.</td></tr>
</table>

[8] Source: PPMU of Ha Tinh province, SIP of lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district subproject, 2014

[9] Source: PPMU of Ha Tinh province, SIR lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district, Ha Tinh Province, 2014

4. ENVIRONMENTAL IMPACT SCREENING

Table 3. Environmental impact screening

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
Pre-Construction Stage Impacts					
Disturbance of unexploded mine and bomb (UXO)	Yes	Minor	Negative	Temporary	**Description:** UXO can be left in some areas that had been suffered from war. Mine detector in subproject area may create safety risk for local people and workers. However, to help in securing safety for people, Ha Tinh PPMU has signed contract with No.319 UXO Clearance One Member Limited Company under Military Corporation No.319 for UXO clearance **Location:** Along the Khe Hao dam, irrigation canal of Khe Hao and Dong Ho reservoirs, subproject drainage canal and road systems. **Objects:** Local people living and cultivate in the subproject area. **Affected level:** Minor due to this affect will be temporary and can be controlled by hiring mine detector team. **Time of impact:** Temporary
Effects on households from loss of residential or agricultural land	No				The canal and road is upgraded on the existing route. Thus, no households or land will be effected by the project
Construction Stage Impacts					
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	Yes	Minor	Negative	Temporary	**Description:** Stone, sand will be purchased from mines and quarry as mentioned above. The owners of these mines take responsibilities for any environmental problems related to vegetation clearing or water quality and PPMU; contractors need to check the permission of all suppliers before purchasing. Filled soil will be taken from Tung Son borrow pit, Tung Loc commune and Hong Loc borrow pit located at a distance of 7 km from the subproject site. The exploitation of sand and stones, operation of borrow pits could create dust, noise, water quality pollution and loss of vegetation. Event most exploiting activities is belong to third parties (as suppliers), but checking the compliance of these suppliers need to be implemented to ensure minimize negative impacts at these locations.

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					Location: Surrounding the borrow pits in Hong Loc and Tung Loc communes **Affected level:** Small, dust and noise will not be seriously affected because (i) the borrow pits locate on the base of the hills, surrounding by separated Acacia plantation area and cemeteries (ii) volume of construction material is not large, about 8020 m^3 of construction stone, 30653 m^3 of filling soil and large part of it will be utilized from excavation soils **Time of impact:** 24 months
Erosion or sedimentation caused during clearing or earthworks	Yes	Minor	Negative	Temporary	**Description:** In the work of excavating and filling for the proposed main weir canals, roads, construct canal structures such as culverts, water inlets and outlets, 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, in Khe Hao reservoir and create filling situation that affects cultivation areas of residents. **Location:** The intersections of the proposed canals and existing irrigation canals, Khe Hao reservoir, downstream of Khe Hao weir. Cultivation areas along the proposed canals and roads of the subproject **Affected objects**: Local people in Kim Tan, Tan Thuong, Tan Trung hamlets - Tan Loc commune who cultivate in the areas near the proposed canal. **Affected level:** minor due to excavated volume soil is reused to fill up banks of proposed canals and the construction for Khe Hao weir and the canals. The excavation and levelling activities will be scheduled to be implemented mainly in dry season; **Time of impact:** 24 months
Impacts arising from temporary storage areas including dust, noise and water quality	Yes	Minor	Negative	Temporary	**Description:** Dust could be arising from sand or soil stockpile if they are not covered carefully especially in dry condition. Runoff water could bring material from the temporary storage sites into the surrounding fields when its rain, impact on the water quality. Loading and unloading construction material at the temporary storage site could create noise and affect nearby households. Load and unload construction material could also create noise and dust and affect nearby people. **Location:** Temporary stockpiles for stone and sand in the subproject area. **Affected objects:** Water bodies near the

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					temporary stockpiles like water rice fields, subproject canals. Local people living near temporary stockpiles. **Affected level:** Small, even the subproject stretches in a large area, the constructions sites are small and separated thus the temporary stockpiles are small and mobile. On the other hands, materials are mainly handled manually and the impact is only in the construction time so the impact will not be significant. **Time of impact:** 24 months
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils	Yes	Minor	Negative	Temporary	**Description:** In the process of excavating, dredging the canals, weir, 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. Wastewater from construction sites and worker camps could be discharged into surrounding water bodies such as the water rice fields in Tan Loc, An Loc, Hong Loc communes and impact on the water quality, reduce the productivity of the field. 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. **Location:** At the downstream of Khe Hao dam, the proposed canals and other canals that receiving irrigation water from Khe Hao and Dong Ho reservoirs, and construction sites in Kim Tan, Tan Thuong, Tan Trung hamlets – Tan Loc commune and Thinh Loc, Hong Loc, An Loc commune; **Affected objects:** Water quality in the canal system of Dong Ho and Khe Hao reservoirs. Local people in the subproject area **Affected level:** Small, the affected level is insignificant because (i) the number of construction machines is small and the volume of construction material is not large (see subproject description); (ii) the construction is scattered over the whole area of the subproject, therefore the concentration of the uncontrolled waste, oil and grease leakage is not remarkable; (iii) excavation and leveling activities are requested to be implemented during dry seasons; **Time of impact:** 24 months
Changes of	No				Upgrading the canals will not affect operation

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
water quality due to changes in inlet operation which cause sedimentation or aluminiferous intrusion or pollution					of inlet as the main inlet from upper Khe Hao Reservoir is still the same, thus it will not cause sedimentation or aluminiferous intrusion or water pollution
Making sensitive flora disappeared and deteriorated	No				The proposed weir, canals and road 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 and air pollutant or exhaust fumes from construction equipment and transport activities	Yes	Minor	Negative	Temporary	**Description:** The construction activities will generate dust, air pollutants, particularly in dry/sunny days. Dust could also be generated from excavation activities and operation of trucks (both transporting materials and discarded soil, solid waste to Loc Ha landfill), and operation of mobile concrete mixing machines and other construction equipment. **Location:** Along the material transportation route (Tan Loc, Thinh Loc, An Loc, Binh Loc commune's roads and road no.22-12). Construction sites at Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes; **Affected objects**: Local people living near the construction sites and material transportation road. **Affected level:** Minor, due to i) very small and low capacity construction equipment and transportation truck will be mobilized on the site such as bulldozer 110Cv, excavator 0.4-0.8 m^3, compactor 9 tons' bulldozer 75CV; ii) the quality of machine must been registered, controlled and maintained periodically, iii) the construction site will be set up at a distance from the residential area. **Time of impact:** 24 months
Noise and vibration from construction equipment and transport activites	Yes	Minor	Negative	Temporary	**Description:** Construction activities such as clearance, excavation of foundation; transport of redundant spoils to the disposal site through unpaved roads… cause the generation of noise and vibrations to be felt with the construction sites and adjacent areas. Noise

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					and vibration from construction equipment and material transportation truck when this is in operation will cause disturbance to workers and local people, especially the sensitive receivers such as school, kindergarten, hospital, and temple… **Location:** Along the transport roads (the commune's road and road no.22-12) and construction sites at Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes; **Affected objects:** - The subproject workers - Local people in the subproject area. - Pupils at the Hong Tan primary and secondary school, Tan Loc primary school, Tan Loc kindergarten, An Loc primary school. **Affected level:** Affected level is minor due to (i) The number of construction machine is not many (03 bulldozers; 06 excavators; 06 tip trucks, 26 mobile concrete mixing machines) and distributes in large subproject area; (ii) construction sites are mainly on the field, away from residential areas. **Time of impact:** 24 months.
Increasing time and area of flooding	Yes	Minor	Negative	Temporary	**Description**: The subproject will upgrade 3374.5 m drainage canals in total. These canals also function as flood discharge canal for the subproject area. Close drainage water for canal construction could reduce capacity of the water flow discharge to Nghen river thus increases time and area of flooding in the flooding season. **Location:** Subproject area, especially the areas surrounding Dinh Lu – Cau Ngao and Loi Ma – Cau Coc drainage system in Thinh Loc and An Loc communes. **Affected objects:** - Cultivation activities in the subproject area - Local people who cultivated in the subproject area **Affected level:** The affected level is insignificant because of the short construction time (24 months) and the main construction activities for drainage canal upgrade will be implemented in dry season The water level of these drainage canals in the dry season is low as observed during the field trip. And the canal

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					totally could be closed section by section for construction. On the other hand, these two canals are only small drainage canal system and do not contribute the large part for floodwater discharge in the flood season. **Time of impact:** 8 months in the rainy season of 2 years construction duration).
Impact on traffic or conditions for property access	Yes	Minor	Negative	Temporary	**Description:** Material transportation will affect on movement demand, transporting goods of local people, disturbance to individual households and cause risk for safety traffic especially near the schools, kindergarten, Loc Ha Hospital, My Loc church… Construction activities can affect on travelling for local people as increasing the density of traffic or block traffic movement. Temporary material storage at roadside, construction machines and construction waste could also block the movement of people who travel on the road. Upgrading weir, spillway, and canals could affect local people to access their cultivation area. Upgrading the management roads and transportation of materials will affect on movement demand, transporting goods of local people, disturbance to individual households and cause risk for safety traffic. **Location:** A long the material transportation roads including communal roads, road no. 22-12 and the proposed roads; cultivation field in the subproject area. **Affected objects:** o Local people living in Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes. o Student of Hong Tan primary and secondary schools; Tan Loc kindergarten and primary school; An Loc primary school, patient of Loc Ha General hospital. o Road users on the subproject roads (Loi Ma – Thien Thinh and Tan Loc – Binh Loc roads, Lower Khe Hao management road); and transportation roads (Tan Loc, Thinh Loc, An Loc, Binh Loc commune's roads and road no.22-12) **Affected level:** Small, since 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. **Time of impact:** 24 months

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
Impact on public infrastructure such as communication electricity wires, inter-commune road, etc.	Yes	Minor	Negative	Temporary	**Description:** Electricity cables were arranged in parallel with communal road to residential areas of An Loc, Thinh Loc, Tan Loc communes. Material transportation roads like Road No.22/12 and commune's roads themselves may be affected by the transportation activities. The existing canals of could also be affected by the construction activities. **Location:** Along commune's roads, road no.22-12, the proposed canals system of Dong Ho and Lower Khe Hao Reservoirs. **Affected objects:** Local people in the subproject area **Affected level:** Minor due to (i) small number of construction and transportation machines (03 bulldozers; 06 excavators; 06 tip trucks, 26 mobile concrete mixing machines); (ii) provincial road No.9, road No.22/12 and the cement concrete communal roads are in good condition; (iii) The impact is only happen in the construction phase so the impact is not large. **Time of impact:** 24 months
Employment or livelihood benefits from employment of local people	Yes	Minor	Positive	Temporary	**Description:** As agreed in the Loan agreement, contractors will use local labourers for simple works such as moving soils, give priority to poor families, female householders, woman if they need jobs. It aims to raise their income, create more jobs and contribute to poverty reduction for community. **Location**: The whole subproject area **Affected objects:** Local people in the subproject areas such as Tan Loc, Thinh Loc and An Loc communes. **Affected level:** Minor, this is a positive impact; however, it requires the coordination between the contractor and CPC of subproject communes and nearby communes in recruiting local labours (contractors often prefer to engage their own trained workforces rather than training unskilled labourers) **Time of positive impact:** 24 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 nearby the proposed canals.
Construction	Yes	Medium	Negative	Temporary	**Description:** It is estimated about 300 workers

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
workers cause social disruption					will be mobilized on the construction sites. 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. **Location:** Workers' camps along the proposed canal the roads and residential area at Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes; **Affected objects:** Local people in the subproject area. **Affected level:** Although the subproject is requested to hire local people and worker activities on the site can be controlled by working regulation in the construction site and construction duration is not long (within 24 months expected), this is still an average impact as the large number of workers (300 workers) and the contractor usually prefer to using their workers than the unskilled local people **Time of impact:** 24 months
Generation of excess spoil	Yes	Minor	Negative / Positive	Temporary	**Description:** Excess spoil could runoff into surrounding water and polluted surface water of the surrounding water bodies such as the water rice field in the subproject area. If temporary dumped at roadside, it could make the road dirty, slippery and create bad odour. The construction of the subproject will involve in excavate 23596 m^3 soil. However, most of them will be reused for canal bank filling purpose. The small amount of excess spoil that could not be used for filling will be transferred to the dumping site of Loc Ha district. Local people usually take this spoil to fertilize their garden land. Representatives of the 5 commune CPCs could managed this activity to support local people fertilize their land. **Location**: Along construction sites in Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes; and the proposed weir site; **Affected objects:** - Local people who cultivate in the subproject area - Local people living near the construction areas - People who travel on the material

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					transportation roads - Pupils of Hong Tan primary and secondary schools; Tan Loc primary and kindergarten; An Loc primary school. **Affected level:** This is a minor impact because the estimated filling soil volume is 30653 m^3 and most of the excavated soil will be utilized for filling. Only small amount of soil that the quality does not matched for filling purpose will be transferred to Loc Ha dumping site. Moreover, local people could take some part of the excess soil to fertilize their land. **Time of impact:** 24 months
Risk to health and safety to local people or construction workers	Yes	Medium	Negative	Temporary	**Description:** Dust, exhaust gas and noise generating from earthworks, transporting material, and operation of machines, etc, which could have direct affects on health of workers and local residents. Accidents may occur if during the construction, workers are not provided with safety equipment, obey construction regulations. Safety risks for local people could be since the illegal entering construction sites. Material transport may create the risk of affects on traffic safety and houses structure on road sides of provincial road No. 9, road No.22/12 and commune's roads in Kim Tan, Tan Thuong, Tan Trung – Tan Loc commune and Thinh Loc and An Loc communes; The temporary storage sites of material and waste, construction machines could block the movement, and increase the safety risks for local people and people who travel on the road, especially the sensitive receivers such as student of Hong Tan Primary and Secondary Schools; Tan Loc Primary and Kindergarten; An Loc Primary School, the patient of Loc Ha General Hospital, commune medical center, Lu temple and My Loc church. Concentration of workers with insanitation living condition may cause some respiratory, skins, eye diseases for local people as well as workers. **Location:** Residential areas located nearby the construction sites and material transportation roads (Provincial road No.9, Road No.22/12 and commune's roads, construction sites along the proposed canals. And workers those present on the site **Affected objects:** affect directly on workers and indirectly on the community near the

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					construction site. **Affected level:** This is a medium impact. The construction sites are mainly on the field, in open air with small quantity of construction volume, low transport frequency of trucks (8 trips/day) and short construction period (within 24 months as expected) so the dust and noise do not have remarkable affects on residents. However, the access road to the construction sites and the material transportation road (road No.22/12 and communal roads) go through residential area of several hamlets in Tan Loc, Thinh Loc, An Loc, Hong Loc communes with a lot of environmental sensitive points such as schools, kindergartens, hospital, medical centre, temple, church… with higher safety risk during construction period. **Time of impact:** 24 months
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	Yes	Medium	Negative	Temporary	**Descriptions:** Solid waste that will be generated from construction mainly includes domestic waste and excavated soil. On estimation, about 1562 m^3 of construction waste and 4500 kg domestic waste will be generated in a month during construction time. If they are not regularly collected and properly disposed, it could make odour and could be carried away by surface run-off into surrounding water bodies (mainly water rice cultivation field) and pollute surface water. . **Location:** Workers' camps along the proposed canals in Tan Loc, An Loc, Hong Loc Thinh Loc communes; cultivation area along subproject canals. **Affected Objects:** Construction workers and local people in the subproject area. **Affected level:** Medium, number of worker is 300 workers; construction activities include upgrade weir, spillway, irrigation and drainage canals and will generate about 1562 m^3/month (construction waste) and 4500 kg/ month (domestic waste). There is a waste collection system in Loc Ha district and waste is collected and transferred to Loc Ha dumping site – about 5 km from the subproject area. Domestic waste from workers will be also transferred to Loc Ha dumping site. **Time of impact:** 24 months
Impacts on irrigation activities	Yes	Minor	Negative	Temporary	**Description:** Construction of the proposed weir and upgrading the primary canals requires dry construction area, meaning of stop water flow in the existing primary canals. There will

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					be a conflict between water demand for agriculture and construction demand during cultivation period and construction time; **Location:** The proposed canals and downstream cultivation area including Tan Loc, Thinh Loc, An Loc communes; **Affected Objects:** Cultivation field in the subproject area. Local people who cultivated in the subproject area **Affected level:** Small, Irrigation schedule could be changed flexibly to construction time; the design consultant has calculated the irrigation level for 2 crops during the weirs and canals construction is about 16000m^3/ha in one year (estimated construction time for the weir and canal is less than 8 months) and the canal closed for construction section by section will not have large impact on the cultivation activities in the subproject area.] **Time of impact:** 24 months
Environmental Recovery	Yes	Minor	Negative	Temporary	**Description:** if construction sites are not cleaned up upon the completion of the canals construction waste and domestic waste from construction camps will pollute local environment. If contractors do not implement site restoration properly in accordance with environmental regulations then environmental problems such as soil erosion, sedimentation and accident may occur. **Location:** construction sites, Tung Son borrow pit, Tung Loc commune and Hong Loc borrow pit, Loc Ha landfill **Affected objects:** - People living near the proposed canals, camp sites, waste disposal and borrow areas - Land and water near the proposed canals, waste disposal and borrow areas. **Affected level:** Small Construction waste and domestic waste will be collected every week so the remains of the waste at the construction sites will be small. Campsites are assumed in small size and simple structure. **Time of impact:** temporary to permanent
Impacts in operation stage					
Inundation of	No				Construction of the weir and main canals, upgrading the primary canals and management

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
sensitive vegetation from operation of the canal					road 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. 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 alumiferious; The proposed canals will be lined by concrete so the water will not be polluted by sediment.
Water is exploited at sensitive ecological places/or reservation areas	No				There is no sensitive ecological areas or protection areas in the subproject
Productivity is improved by increase of irrigation capacity	Yes	Significant	Positive	Permanent	**Description:** The completion of subproject will increase the irrigation area to designated capacity of Khe Hao and Dong Ho Reservoirs (from 64 to 228 ha for lower Khe Hao and 92 to 190 ha for Dong Ho Reservoir) **Location:** Tan Loc, Thinh Loc and An Loc, Hong Loc and Binh Loc communes. **Affected Objects:** cultivation area of the subproject; local people in the subproject area. **Affected level:** Significant
Cultivation habits will be changed due to the turning of land use for agriculture	Yes	Significant	Positive	Permanent	**Description:** The subproject will increase irrigation capacity of Dong Ho and Lower Khe Hao Reservoirs from current 49% and 28% respectively and the utilization area of agricultural land will be increased thanks to the sufficient irrigation water

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
purposes					**Location:** The utilization area of agricultural land will be increased at less cultivated area where often occurs drought in Tan Loc, Thinh Loc, An Loc, Hong Loc, Binh Loc communes **Affected Objects:** cultivation area of the subproject; local people in the subproject area. **Affected level:** Significant
Reduce nutrition in the soil due to over-irrigation	Yes	Minor	Negative	Permanent	**Description:** 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 cannot 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. **Location:** beneficiary area in Tan Loc, Thinh Loc, An Loc, Hong Loc and Binh Loc communes **Affected objects:** - Soil quality of cultivated land - Local people in beneficiary area **Affected level:** Small
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	Minor	Negative	Permanent	**Description:** 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. **Location:** Along the proposed canals. **Affected objects:** - The subproject canals - Local people in beneficiary area **Affected level:** Small

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
Risks caused by natural calamity	Yes	Minor	Negative	Permanent	**Description:** If flooding water level and flow volume exceed the flood design frequency, the weir might be broken. Sediment at upstream of the weir makes water storage volume decrease and affects the weir structure; **Location:** at the weir and canals **Affected objects:** Weir and canal **Affected level:** Minor
Affecting water quality due to the increased volume of pesticide or chemical used for water treatment or increasing the waste water	Yes	Minor	Negative	Permanent	**Descriptions:** After constructing the canals, the cultivated area will increase about 262 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 and irrigation water, possibly groundwater. The risk will increase if the management of pesticides is not reasonable. **Location:** Irrigation area in Hong Loc, An Loc, Tan Loc, Binh Loc and Thinh Loc communes. **Affected objects:** - Water quality in the subproject area - Local people in the subproject area **Affected level:** Small due to application of advanced technology in agriculture and proposed training for local people such as IPM
Affects on employment or livelihood	Yes	Significant	Positive	Permanent	**Description:** 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. **Location:** The subproject area in Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc communes. **Affected objects:** Local people in the subproject area **Affected level:** Significant
Impacts on ethnic groups	No				There are no ethnic households living in the subproject area
Generating solid and liquid waste	Yes	Minor	Negative	Permanent	**Location:** The subproject area in Kim Tan, Tan Trung, Tan Thuong – Tan Loc commune and Thinh Loc, An Loc, Binh Loc communes; **Affected level:** Small Agricultural waste after harvested or garbage from other farming activities such as pesticide covers and straw is popular. Currently, waste

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	MINOR OR SIGNIFICANT ?	POSITIVE OR NEGATIVE?	TEMPORARY OR PERMANENT?	
					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;
Changing the service approaching ability of local residents thanks to building management roads for the work	Yes	Significant	Positive	Permanent	Management roads combined with traffic roads will increase the approaching ability of local residents to services from markets, areas for commodity and agriculture product exchange.
Occupying land of canal bank and canal and weir safety corridor for individual purposes	Yes	Minor	Negative	Permanent	**Location:** the right of way (ROW) of the corridors of canals and dam of the sub-project in Kim Tan, Tan Trung, Tan Thuong – Tan Loc commune and Thinh Loc, An Loc communes. **Affected level:** Small The occupying land for planting perennial trees or for personal purpose in the right of way (ROW) of the canals and dam corridors are remains. 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;

5. OUTLINE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

5.1. Environmental Mitigation Plan

Table 4 - Environmental mitigation plan

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
Pre-construction stage			
High risk of environmental degradation due to inappropriate construction materials management planning	As planned in designs documents, the main construction material will be purchased from licensed borrow pits, quarries and mines near the subproject area. In case that the above material source will be changed, an appropriate material management plan should included the following: ▪ Required materials, potential sources and estimated quantities available ▪ Material supply manners: preferring to purchase from existing material quarries. ▪ Agreement with the local authorities ▪ Check with environmental permission/certification of the quarries to ensure that owners have considered environmental impacts and mitigation measures. ▪ Environmental recovery plan ▪ Material transportation manner plans and schedules ▪ Program for delivery of quarry and borrow material	Design Consultant; Ha Tinh PPMU	Included in the contract with design consultant No marginal cost
High risk of environmental degradation due to inappropriate spoil and waste disposal plans	▪ Re-use of waste materials & spoil disposal locations included in bid and contract documents. Surplus soil including cutting humus is used for levelling the canal safety corridor; ▪ Select a properly treatment manners, preferred of for fill up the site of other projects activities/ purposes. ▪ Recheck Loc Ha dumping site before construction start. 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 transfer to Loc Ha dumping site. ▪ Waste materials transportation manner plans and schedules ▪ Establishment of complaints management system for duration of the works	Design Consultant; Ha Tinh PPMU	Included in the contract of design consultant No marginal cost
Disturbance of unexploded mine and bomb (UXO	▪ Supervise and monitor the contract with Company No.319. ▪ Install signs and alarms system at the UXO removal area while implement to warn people from entering the area. ▪ Checking the construction site and UXO clearance certificate upon the UXO removal complete.	Ha Tinh PPMU	Included in contract between Ha Tinh PPMU and UXO removal company
Construction stage			
Dust,	▪ Operation license of Tung Son and Hong Loc		No marginal

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	borrow pits have been approved by Ha Tinh DONRE. The operations licenses and approved environmental certificate need to be checked before starting purchase soil from these pits. ▪ In the exploitation process of Tung Son and Hong Loc borrow pits, Tung Loc and Hong Loc communes, contractor should follow environmental protection issues, including: - Working machines must be under periodically quality controlled; - Oil and other chemical pollutants from working machines should be strictly controlled and stored separately, avoiding leakages; - Workers should use protective equipment while working within the Site; - Temporary earth drainage system and ditch should be formed to store waste water safely in rainy season to reduce turbidity before releasing water into cultivated area; - Water should be regularly sprayed within borrow areas to reduce dust generation ▪ Cover trucks that transport materials purchased from the borrow pits and mines (along provincial road No. 9, road No.22/12 and communal roads) ▪ Construction vehicles, machines and equipment need 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.	Contractor	cost and Included in the civil work contract
Erosion or sedimentation caused during clearing or earthworks	▪ Install sediment fences and/or sediment traps at intersections of the proposed drainage canal and the existing main drainage canals (intersections between Loi Ma - Cau Coc canal and Dong Doi main drainage canal; between Tan Loc - Binh Loc canal an Hong Tan main drainage canal) ▪ Construct temporary drainage canals to reducing affects on residential area in Tan Loc, Binh Loc, An Loc and Hong Loc communes; ▪ Upgrading main weir of reservoir need to be implemented section by section and provide vegetable cover as soon as possible when excavation completed. ▪ Avoid excavation activities during the rainy season where possible.	Contractor	No marginal cost, and Included in the civil work contract
Impacts arising from temporary storage areas including dust, noise and water quality	▪ Store material location need to be at least 300 m away from the sensitive receivers such as Hong Tan primary and secondary schools, Tan Loc primary school and kindergarten, An Loc primary school, Lu temple… ▪ Building up appropriate plan of material management to reduce material stagnated on the site;	Contractor	No marginal cost and Included in the civil work contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
	▪ Store material at high place with impervious surface and at least 10 m away from the water bodies (water rice fields, ponds, existing canals). ▪ Cover material stockpile with canvas when they are not in used and during rainy; ▪ Material transportation is strictly forbidden in the evening when stores are located next to residential areas.		
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils	▪ Store chemicals in secure area, with concrete floor and weather-proof roof and at least 10 m away from water rice fields, ponds and existing drainage canals (Dong Doi and Hong Tan main drainage canals; ▪ Ensure construction equipment and vehicles are maintained in good conditions to avoid leakage; ▪ Use mobile sanitary toilets following regulations of Health Ministry and washing facilities at construction camps (*Circular No 27/2011/TT – BYT promulgating on National technical regulation on Hygienic conditions for Latrines/ QCVN 01: 2011/BYT on National technical regulation on Hygienic conditions for Latrines*) ▪ Provide rubbish bins and containers at camping sites and construction sites. ▪ Signed contract with local environmental company to regularly transport waste to the Loc Ha dumping sites; ▪ Management of hazardous materials and waste need to be followed the requirements which stated in Decree 36/2015/TT-BTNMT; ▪ Hazardous materials spilling out unexpectedly to be cleaned, reported and monitored; ▪ The wastewater and solid waste will not be allowed to through on surrounding water bodies (water rice fields, ponds, Dong Doi and Hong Tan drainage canals)	Contractor	No marginal cost and Included in the civil work contract
Noise, dust or exhaust from construction equipment and transport activities	▪ Spray water at least one time per day in the dry/hot day in transportation road section goes through the sensitive areas (5 schools and kindergarten, Loc Ha General Hospital…) ▪ Cover all trucks carrying raw materials to and from the construction area and along the transport routes as provincial road No. 09, road no.22/12 and the communal roads of An Loc, Tan Loc, Binh Loc and Hong Loc communes; ▪ Mobile concrete batching equipment to be arranged a distance of 500m away from residential areas of An Loc, Tan Loc, Binh Loc, Hong Loc communes and only allow operating during daytime. ▪ Operation schedule of noise generated equipment/vehicles need to be avoid the rest time of local people, especially in the location close to residential areas in An Loc, Tan Loc, Binh Loc and Hong Loc communes and along the transport	Contractor Canvas, washing facilities	No marginal cost and Included in the civil work contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
	route of provincial road No. 9, road No.22/12 and communal roads; ▪ Provide adequate protective equipment for workers who run noise generated machines ▪ Equipment needs to meet standards of exhaust, noise, and vibration as regulated by the Government and they need to be properly maintained.		
Increasing the flooding area and time	▪ Inform construction schedule/ scope in advance to Tan Loc, An Loc, Binh Loc, Hong Loc and Thinh Loc CPCs. ▪ Discuss with agricultural and irrigation staff of Loc Ha DPC to identify suitable construction time. ▪ Complete construction section by section before start a new one to avoid long construction time. ▪ The construction of drainage canal will be implemented in dry season only. ▪ Construction equipment shall not be allowed to take place on the irrigation and drainage canals	Contractor	No marginal cost and Included in the civil work contract
Affects on traffic or conditions for property access	▪ Inform construction schedule and scope in advance to Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs. ▪ Avoid material transportation in the rush hours when student go to schools, people go to work and back home (6h30 7h30 am; 11h30-13h30; 16h30-17h30. ▪ Install signal lamps and sign panels at crossing points with road branches or close to residential areas. ▪ Limit the speed of means of transport on the route; ▪ In case unavoidable block the access to schools, kindergarten, medical clinic… the contractors should construct a temporary access route. ▪ Install traffic signals at site to regulate and limited speed of vehicles or signals of work site, especially at the intersections where closed to cultivation area of local people in Binh Loc, An Loc, Tan Loc and Hong Loc communes; ▪ Provide temporary access for local people if any bock of road happened during construction; ▪ Reinstate as pre-project condition for any damage caused by construction activities.	Contractor	No marginal cost and Included in the civil work contract
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	▪ Consulting the sub-project engineering staff to identify public infrastructure and avoid or minimize physical impacts on their infrastructures; ▪ Work with local authorities to obtain agreement in using any public facilities; ▪ Limit the speed and load of material transportation truck in rainy season (April to October) to avoid accidents or damage road; ▪ Contractors must repair local roads, electricity lines and other local infrastructure if they are damaged by the construction activities.	Contractor	No marginal cost and Included in the civil work contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
	▪ Warning and set rule for workers to follow traffic regulations (limit the velocity of trucks especially when travel in the sensitive areas of schools, kindergartens, hospital, temple…); ▪ Install warning signs and avoid crashes to electric poles and houses.		
Generation of excess spoil	▪ Utilise excavated spoil for filling purpose, as much as possible, to minimize the volume of excess spoil (estimated volume of filling soil is 30653 m^3 and excavated soil is about 42200 m^3); ▪ Temporary spoil disposal site shall be located at least 50 m from water bodies, like water rice fields, ponds, Dong Doi main drainage canal, Hong Tan main drainage canal, and shall be protected from erosion by avoiding formation of steep slopes; ▪ Unused excavated soil need to be transported to and disposed at Loc Ha dumping site.	Contractor	No marginal cost and Included in the civil work contract
Construction workers cause social disruption	▪ Consult with Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs to arrange accommodation for workers (to avoid any negative impacts on local people's activities) and register temporary residence card for them; ▪ Recruit local people for simple work such as soil moving, road compaction... ▪ Consider house leasing in locality in comparison with site camps and consultation with competent staff in planning local housing for workers in the local community. ▪ Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions; ▪ Distribute guidance leaflets to workers or invite workers to disseminate about the prevention of infectious diseases and diseases that may occur in the areas of the shack camp. ▪ 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.	Contractor	No marginal cost and Included in the civil work contract
Risk to health and safety to local people or construction workers	▪ Inform Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs in advance on construction schedule and scope ▪ Consult representatives of Hong Tan Primary and Secondary Schools, Tan Loc Primary School and Kindergarten, An Loc Primary School, Loc Ha General Hospital, Lu Temple and My Loc church on construction schedule and scope, working hour… before commencement. ▪ Collaborate with infrastructure staff of the five CPCs to install warning sign boards, road hump (if applicable) near the sensitive areas; ▪ Provide workers with full safety equipment and train them how to use properly.	Contractor Safety equipment	No marginal cost and Included in the civil work contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
	▪ Install mobile toilets at worker camps and provide sufficient domestic water		
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	▪ 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; ▪ Collect used oil and grease in a place with cover roof and impervious ground and at least 10 m far from the water body; ▪ Collect solid waste regularly and transport to Loc Ha dumping site – 5 km away from the subproject area; ▪ Management of construction waste, domestic waste and hazardous waste as per proposed on waste management items.	Contractor	No marginal cost and Included in the civil work contract
Impacts on irrigation activities	▪ The Contractor need coordinate with irrigation authority (Loc Ha irrigation exploitation management enterprise), the 5 commune's irrigation staffs and relevant cultivation households during upgrading Lower Khe Hao reservoir and the irrigation canal systems to reach agreement on water supply time (when construction suspension), construction time (should be implemented at the time when irrigation activities are not done); ▪ Upgrading Lower Khe Hao reservoirs and the irrigation canal system of Khe Hao and Dong Ho reservoirs in dry season with application of construction time when irrigation activities are not implemented. Construct Loi Ma - Thien Thinh, Tan Loc Binh Loc roads and Lower Khe Hao Management Road in the irrigation time instead. ▪ If construction time could not avoid water supply time, divert canal must be built to transfer water for rice fields under the subproject area ▪ Inform commune's irrigation staff, irrigation exploitation enterprise or relevant authorities in advance so they can make plan on their own initiative; ▪ Ha Tinh PPMU and the Contractor need pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to water supply cut off for construction activities.	Contractor Ha Tinh PPMU, Contractor	No marginal cost and Included in the civil work contract No marginal cost Included in the contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
Impact by impropriate environmental recovery responsibilities	▪ Remove all of the construction machines and construction tools out of the construction sites upon construction complete. ▪ Upon construction complete, perform industrial clean at that site and temporary acquired land area and before hand over the land area back to local authorities ▪ Compensate adequately for the temporary acquired land area that could not be recovered ▪ Plant tree to recover the vegetation coverage. ▪ Taking photos of the clearance site before clearance and after recovery process complete to ensure the vegetation coverage has been recovered adequately.	Ha Tinh PPMU Contractor	No marginal cost and Included in the civil work contract
Operation stage			
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 Ha Tinh province	Provincial budget
Congested canals cause flooding situation	▪ Operate regulation works canal properly, flexibly with real condition to avoid waste and water overflow at the proposed canals; ▪ Periodically dredge irrigation canal system after harvesting crop, heavy rain and flood; ▪ Periodically inspect and maintain canals and on canal structures.	Northern Ha Tinh Irrigation One Member Limited Company	Provincial budget
Risks caused by natural calamity	▪ Ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity; ▪ Irrigation works exploitation factory need repairs and the works need periodic maintenance to ensure the operation capacity.	PPMU Northern Ha Tinh Irrigation One Member Limited Company	No marginal cost Provincial budget
Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water	▪ Coordinate with agriculture authority to ensure that farmers are trained on irrigation method; ▪ 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; ▪ Ensure weed and other floating waste are periodically cleaned along the canals; ▪ Coordinate with Agriculture Extension Centre to ensure that farmers are trained on Insect Prevention Method (IPM).	Northern Ha Tinh Irrigation One Member Limited Company/ DARD	Provincial budget and other assistance funds
Generated solid and liquid waste	▪ Periodically collect waste in canals and field surface; ▪ Build waste collection system; ▪ Improve the awareness of local people of waste management and collection in the field, canals via training courses.	Northern Ha Tinh Irrigation One Member Limited Company/ DARD	Provincial budget
Occupation of	▪ Implement strict management measures to protect	Northern Ha Tinh	Provincial

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
canal and canal safety corridor for individual purposes	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)	Irrigation One Member Limited Company	budget

5.2. Environmental Monitoring Plan

Environmental effects monitoring

7. 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
Construction stage						
Minimization of noise generation	Noise level	At nearest residential areas of the proposed canal and residential areas near material transportation roads in Kim Tan, Tan Trung, Tan Thuong – Tan Loc commune and Thinh Loc, An Loc communes;	Observation and community consultation using equipment to measure noise dB (A), if that is the big noise levels was observed	Weekly, monthly or when community's feedback is raised	Construction Supervision Consultant (CSC)	Included in the contract with Supervision contractor
				Every 3 months during construction duration or if there is feedback about high noise levels from the community	Construction Supervision Consultant (CSC)/ Environmental Officer at PPMU	Included in the contract with Supervision contractor
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team PPMU and CMPU environmental officers	Included in separated contract with CPMU
Minimization of dust generation	Dust concentration	The same monitoring locations of Noise	Observation and community consultation using equipment	Weekly, monthly or when community's feedback	Construction Supervision Consultant (CSC)	Included in the contract with Supervision contractor

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
			to measure dust level (TSP mg/m^3) if high dust level was observed	is raised		
				Every 3 months during construction duration or if there is feedback about high noise levels from the community	Construction Supervision Consultant (CSC)/ Environmental Officer at PPMU	Included in the contract with Supervision contractor
				Every 6 months during construction period or when community' s feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team PPMU and CMPU environmental officers	Included in separated contract with CPMU
Control of surface water quality	Sedimentation, rubbish, lubricating oil and solid waste	The intersections of the proposed canals and existing canals; The intersections of the proposed canal and drainage canals.	Visual Observation; Public consultation	Weekly and after large rain evens	Construction Supervision Consultant (CSC)/ Environmental Officer at PPMU	Included in the contract with PPMU
				Based on requirement of water supply	Local people, Community monitoring committee Local irrigation staff (commune) Environmental Officer at PPMU	Province budget PPMU operation budget
				Once every 6 months during construction or in case of at any time or in case of complaints	Monitoring consultant on environmental safeguard policies/LIC PPMU and CMPU environmental	Included in separated contract with CPMU

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				of residents	officers	
Labour safety and community safety	Number, use of labour equipment; signal system Obey for traffic law of transportation mean of construction material	In construction sites and on material transportation roads along residential areas Kim Tan, Tan Trung, Tan Thuong – Tan Loc commune and Thinh Loc, An Loc communes.	Observation and community consultation	When community's feedback is raised	Local people, Community monitoring committee	Without marginal cost
				Weekly/ Monthly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ Environmental Officer at PPMU	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
Operation stage						
Surface water quality	BOD, DO, pH, TSS, Total coliform; fecal coliform, turbidity	Location: At 04 points: at the drainage canals in Kim Tan, Tan Thuong hamlets, Tan Loc commune; at Khe Hao reservoir, at canal connected to the inlet	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, Northern Ha Tinh Irrigation One Member Limited Company;	Included in operation cost of Northern Ha Tinh Irrigation One Member Limited Company
Waste management	Conditions on environmental sanitation within the subproject area; temporary waste storage yard	Throughout the subproject area	Observation and community consultation	Once every 6 months in first 2 years of operation	Northern Ha Tinh Irrigation One Member Limited Company	Budget provided following regulations at Decree No.115
Periodical canal	Level of canal	Along the proposed canal	Field survey,	Once every 6 months in	DARD/ Northern Ha	Local budget

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
maintenance	sedimentation and conditions of sluices, equipment and works on the main canal		community consultation	first 2 years of operation	Tinh Irrigation One Member Limited Company	
Re-occupation of canal corridor	Occupation area, type of occupation (for planting trees or other purposes)	Along the proposed canal	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Northern Ha Tinh Irrigation One Member Limited Company	Local budget

5.3. Environmental Compliance Monitoring

8. 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
Construction Stage						
Environmentally responsible procurement	Inclusion in bid docs	All canal alignment	Checking documents	Bid preparation, before start of civil works	Ha Tinh PPMU	Included in the design contracts
Plan construction materials management	Meeting minutes and agreement with local authorities	All canal and proposed route alignment	Checking documents	Prior to start of site works and throughout construction phase	Ha Tinh PPMU	Included in the design contracts
Plan spoil and waste disposal	Meeting minutes and agreement with local authorities	All canal and proposed route alignment	Checking documents	Prior to start of site works and throughout construction phase	Ha Tinh PPMU	Included in the design contracts
UXO removal	UXO clearance process and	Through out the construction	Checking documents/ Observation	Before construction start	Ha Tinh PPMU	There are separate bidding

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
	certificate	sites				packages
Construction Stage						
Erosion and sediment controls	Condition and capacity of controls, Implementing of mitigation measures in Table 4	Throughout construction sites	Observation Document review and public consultation	Weekly, monthly, quarterly, and After heavy rain	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Materials storage	Condition of materials storage areas Implementing of mitigation measures in Table 4	Throughout construction sites	Observation Document review and public consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leaks Implementing of mitigation measures in Table 4	Throughout construction sites	Observation document review and public consultation, interview workers on the site	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during	Monitoring consultant on environmental	Included in contract with CPMU;

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				construction or in case of at any time if necessary	safeguard policies of LIC and CPMU safeguard staff	CPMU operation budget
Construction camp conditions	Cleanliness; waste disposal facilities; general conditions And Implement mitigation measures in Table 4	All site camps	Observation, interview workers on the site and documents review	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Construction workers cause social disruption	Provision of sign broads, relation with local authorities and implement mitigation measures in Table 4	Throughout construction site	Observation document review and public consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Risks to health and safety of local people and construction workers	Check implementation of all items. Check compliance to Labour Code of Vietnam and other relevant regulations	Throughout construction sites	Checking documents, observation and community consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during	Monitoring consultant on environmental	Included in contract with

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
	and implement mitigation measures in Table 4			construction or in case of at any time if necessary	safeguard policies of LIC and CPMU safeguard staff	CPMU; CPMU operation budget
Water pollution	Checking equipment certificate, surface water quality and implement mitigation measures in Table 4	Through out construction sites	Checking documents, observation and community consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Flooding	Checking construction schedule and implement mitigation measures in Table 4	Along proposed drainage canals	Checking documents, observation and community consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
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 Contracts signed with Construction Supervision and Loan Implementation Consultant Team (LIC) Local budget
				Every six months	Environmental Specialist of LIC Team	

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Waste disposal	Environmental sanitation at construction site and temporary waste storage area and implement mitigation measures in Table 4	Throughout construction site	Checking documents, observation and community consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Public infrastructure	Construction schedule, machine registration, warning signs board, speed limit and implement mitigation measures in Table 4	Throughout construction site	Checking documents, observation, public consultation	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies of LIC and CPMU safeguard staff	Included in contract with CPMU; CPMU operation budget
Impacts on irrigation activities	Checking construction schedule and implement mitigation measures in Table 4	Throughout construction site	Checking documents, observation public consultation and working with local authorities	Weekly, monthly, quarterly	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
				Once every 6 months during construction or in case of at any time if	Monitoring consultant on environmental safeguard policies of LIC and CPMU	Included in contract with CPMU; CPMU operation budget

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				necessary	safeguard staff	
Environmental recovery	Vegetable recovery on the sites and Implement mitigation measures in Table 4	Throughout construction area	Observation, public consultation, interview workers on the site	Completed Construction	Environmental Consultant in CSC team and PPMU safeguard staff Local Community Monitoring Boards	Included in CSC contracts PPMU operation budgets Local budget
Operation Stage						
Waste management	Site cleanliness	Throughout sub-project area	Observation	6 monthly for first 5 years of operation	Northern Ha Tinh Irrigation One Member 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/ Northern Ha Tinh Irrigation One Member 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/ Northern Ha Tinh Irrigation One Member 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/ Northern Ha Tinh Irrigation One Member Limited Company	Budget provided following regulations at Decree No.115

5.4. EMP Implementation Arrangements

Table 7 - EMP Implementation

Organization	Roles and Responsibilities		
	Subproject Preparation	Subproject Implementation	Subproject Operation
CPMU	Advice to PPMU Safeguards	Suggest to PPMU	Advice to PPMU

Organization	Roles and Responsibilities		
	Subproject Preparation	**Subproject Implementation**	**Subproject Operation**
	Officer on IEE and IEE/EIAR preparation Review and provide "no-objection" on IEE or IEE/EIARs submitted by PPMUs	Safeguards Officer on EMP implementation during construction Monitor progress during construction Consolidate environmental reporting from PPMU	Safeguards Officer on EMP implementation during first 2 years of operation Monitor progress during first year of operation Consolidate PPMU environmental reporting
Ha Tinh 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
Ha Tinh 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
Ha Tinh PPMU	Engage consultant and have overall responsibility for IEE 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
Loc Ha DPC	Approval of subproject EPPs 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
Loc Ha Subproject Support Teams (SST)	Assist in IEE/EPP preparation as required Assist PPMU to review bidding	Day to day supervision of contractors' in district including compliance with	Undertake environmental monitoring and

Organization	Roles and Responsibilities		
	Subproject Preparation	**Subproject Implementation**	**Subproject Operation**
	documents, contract documents, and tenders to ensure environmental issues are adequately addressed	environmental management requirements Undertake environmental monitoring and coordination of local community environmental monitoring activities	coordination of local community environmental monitoring activities for first year of operation
Commune Supervision Boards (CSBs) and local community members[10]	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
Northern Ha Tinh Irrigation One Member 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	N/a

[10] 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.

Organization	Roles and Responsibilities		
	Subproject Preparation	**Subproject Implementation**	**Subproject Operation**
		included in the report, which will be sent to PPMU.	

5.5. Monitoring and Reporting System

Table 8 -Monitoring and Reporting System

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

5.6. EMP Budget

Table 9 - EMP Budget

Item	Marginal Costs for Pre-Construction	Marginal Costs for Construction	Marginal Costs for Operation	Marginal Costs Sub-Total
Monitoring				
Ha Tinh PPMU's Internal monitoring	Included in management cost of PPMU	Included in the Contracts with the Contractor and CMC as well as in PPMU's management cost	Local and provincial budget	Included in 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/QD-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	Included in operation budgets of PPMU and CPMU	Local budget	n/a
Public disclosure	Defined in consultancy contract on IEE	Included in a separate contract with CPMU	n/a	Public disclosure
TOTAL *(Intensify the capability and public disclosure)*				

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	15 /09/ 2014
	Dates of meetings (if requested)	25/09/2014
	Minutes of meeting attached (Yes / No)	Yes
Public meetings	Date(s) held	25/09/2014

CONSULTATION METHOD	DETAILS OF ACTIVITIES	
	Location(s) held	PC's meeting hall and cultural house of Thinh Loc and Tan Loc communes
	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 81 people Man: 43 people Women: 38 people (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?
Affect water supply and agriculture production	Local people	Make plan for water supply properly. Require farmer to implement in accordance with harvest. Inform local people about construction schedule
Dust	Local people	It is desired that all trucks have to be covered by canvas
Traffic safety on commune's roads	Local people	The Contractors are supposed to slow down when transporting materials by the residential area along commune's roads. It is necessary to plant construction signposts and speed limit signs.
Road damage	Local people	All trucks must follow the limited load capacity of the local roads. Contractors must repair material transportation roads if they damage them.
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.

Description of Issue Raised	By Whom?	Required Follow-up Actions?
Generated solid and liquid waste	Local people	Improve the awareness of local people of waste management and collection in the field, canals via training courses.

6.3 Additional public consultation for the preparation of Environmental Impact Assessment

9. Additional public consultation activities have been implemented from 26 – 28 June 2016 at the meeting rooms of Binh Loc, Thinh Loc, An Loc, Hong Loc and Tan Loc CPCs. The participants are representatives of CPCs, village heads, Young Communist League, Fatherland front, Farmer Association, Women Union and local people from 5 communes. The discussion focus on potential environmental impacts during the construction phases and recommendation from local people for mitigations measures. Public consultations have been implemented by Irrigation Science and Technical Implementation Institute.

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

10. The subproject "Upgrading irrigation/ drainage and rural road system in flooding-prone area of Loc Ha district" will be implemented by Ha Tinh PPMU under IRDPCP in Loc Ha district, Ha Tinh province.

11. 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:

- Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials;
- Erosion or sedimentation caused during clearing or earthworks;
- Impacts arising from temporary storage areas including dust, noise and water quality;
- Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils;
- Dust and air pollutant or exhaust fumes from construction equipment and transport activities;
- Noise and vibration from construction equipment and transport activities;
- Increasing time and area of flooding;
- Impact on traffic or conditions for property access;
- Impact on public infrastructure such as communication electricity wires, inter-commune road, etc.;
- Construction workers cause social disruption;
- Generation of excess spoil;
- Risk to health and safety to local people or construction workers;
- Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps;
- Impacts on irrigation activities;
- Improper environmental recovery.

12. A range of mitigation and monitoring measures has been developed for the sub-project, which includes the following activities:

Mitigation measures:

- Inform construction schedule and scope in advance to Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs
- Construction vehicles, machines and equipment need to meet standards of exhaust, noise, and vibration as regulated by the Government. Cover truck with canvas during the transport of construction materials, watering the road surface in the dry/hot day, especially in the borrow pits and mines area, near the schools and kindergartens, Loc Ha General hospital. Besides, other measures may include installing wheel washing equipment's at construction sites and regularly maintaining vehicles and machines.
- The Contractors do not transport materials at rest hours (7 pm to 6 am in the next day) 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 (Northern Ha Tinh Irrigation one Member 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 Ha Tinh 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 etc. 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 (Northern Ha Tinh Irrigation one Member 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:

13. Upgrading irrigation/ drainage and rural road system in flooding-prone area of Loc Ha district, Ha Tinh Province will upgrade weir, spill weir of lower Khe Hao Reservoirs, upgrade irrigation canals of Khe Hao and Dong Ho Reservoirs, drainage canal and rural roads, ensure irrigation water supply for 418 ha cultivation area of Khe Hao and Dong Ho Reservoirs and improve livelihoods and reduce poverty for local people in the subproject area. It's also support the movement of local people and transportation of goods and drainage in the flood season. It is expected to directly benefit 29,458 people in 05 communes namely Thinh Loc, Tan Loc, Binh Loc, Hong Loc and An Loc. Thus, the subproject will contribute to promote socio-economic development and modernize rural area;

14. 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 Ha Tinh 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 “Upgrading irrigation/ drainage and rural road system in flooding-prone of Loc Ha district, Ha Tinh Province” should be approved by authorities so that next steps can be implemented to ensure good progress and project benefits.

8. ANNEXES

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

Annex 1: Photos of subproject area and locations of air and water quality monitoring

Photo 1: The existing spillway of Lower Khe Hao Reservoir

Photo 2: Overview of Lower Khe Hao Reservoir

Photo 3: Water quality monitoring point at Khe Hao reservoir

Photo 4: Air quality monitoring point at the beginning of canal no.3

Photo 5: Air quality monitoring point in front of Lu temple, Tan Loc commune

Photo 6: Air quality monitoring point in front of Hong Tan secondary school, Tan Loc commune

Photo 7: A section in Loi Ma – Cau Ngao drainage canal

Photo 8: Water quality monitoring point in Tan Thuong hamlet, Tan Loc commune

Photo 9: Current condition of the Khe Hao Management Road

Photo 10: Water quality monitoring point in Kim Tan hamlet, Tan Loc commune

Annex 2: Public consultation and meeting minutes

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Tan Loc commune

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Tân Lộc....., ngày 25 tháng 09 năm 2014

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

BIÊN BẢN LÀM VIỆC

Hôm nay, ngày 25 tháng 09 năm 2014, tại...Tân Lộc.....chúng tôi gồm:

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

- Ông/Bà...Vương Thanh Thủy, Chức vụ...Chuyên gia đào tạo
- Ông/Bà...Đoàn Văn Định....., Chức vụ...Chuyên gia tái định cư
- Ông/Bà...Vũ Hoàng Lâm..... Chức vụ...Chuyên gia môi trường

II. Đại diện Ban QLDA tỉnh

- Ông/Bà...Ng Thanh Lâm..., Chức vụ...Cán bộ ký.....
- Ông/Bà....., Chức vụ.....
- Ông/Bà..... Chức vụ.....

III. Đại diện địa phương

- Ông/Bà...Ng Ngọc Thạch..., Chức vụ...Chủ tịch UBND Xã
- Ông/Bà...Ng Duy Đan....., Chức vụ...cán bộ địa chính
- Ông/Bà...Trần Thị Tình..... Chức vụ...Chủ tịch hội phụ nữ xã
  Ng Trọng Thảo — Chủ tịch hội nông dân

Nội dung làm việc:

Đại diện Ban quản lý dự án giới thiệu quy mô, tác động của từng hạng mục của dự án thành phần. Chuyên gia tái định cư giới thiệu về chính sách tái định cư Hội tái định cư của nhà tài trợ cũng như của Chính phủ Việt Nam.

Chuyên gia môi trường trình bày về các tác động môi trường của dự án và biện pháp giảm thiểu các tác động môi trường trong giai đoạn thực thi dự án, thi công và vận hành.

Chuyên gia đào tạo trình bày, thảo luận bổ sung về nhu cầu đào tạo của dự án.

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

Nguyễn Văn Dương

Đại diện UBND xã

Đại diện tư vấn

Vũ Hoàng Lân

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Tân Lộc....., ngày 25 tháng 09 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP

CÁC TỈNH MIỀN TRUNG - KHOẢN VAY BỔ SUNG

BIÊN BẢN HỌP 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: Sửa chữa nâng cấp hệ thống tưới tiêu vùng ngập úng huyện Lộc Hà

Xã Tân Lộc, huyện Lộc Hà, tỉnh Hà Tĩnh

I. Thành phần tham dự:

- Ông/Bà Vương Thanh Hưng, Chức vụ Chuyên gia đào tạo
- Ông/Bà Đoàn Văn Định, Chức vụ Chuyên gia tái định cư
- Ông/Bà Vũ Hoàng Lân, Chức vụ Chuyên gia môi trường
- Ông/Bà Nguyễn Thanh Lân Chức vụ Cán bộ kỹ thuật ban QLDA tỉnh
- Ông/Bà Ng Ngọc Thạch, Chức vụ Chủ tịch UBND P.X.ã
- Ông/Bà Trần Thị Tịnh, Chức vụ Chủ tịch hội phụ nữ
- Ông/Bà Ng T.Trọng Thảo, Chức vụ Chủ tịch hội nông dân

- 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

- Vẫn còn hiện tượng trọng nam khinh nữ => đề xuất tham các lớp tập huấn về bình đẳng giới và mời cả nam giới tham gia tập huấn.
- Do ngập lụt, mưa bão, mùa màng thường ảm nhiều nên tỉ lệ phụ nữ các bệnh phụ khoa còn cao
- Vẫn còn hiện tượng nam giới nghiện rượu và xảy ra bạo hành gia đình ảnh hưởng đến phụ nữ và trẻ em
- Để nghị chính quyền có tiếp tục hỗ trợ các vấn đề: Vấn đề giải pháp, tài mặt bằng, tái định cư, vấn đề nước sạch cho các hộ gia đình
- Nâng cao vai trò của Hội phụ nữ trong các hoạt động vận động, triển khai các hoạt động ở xã

III. 2. Các vấn đề về môi trường

Trong quá trình thi công, cần phải thu gom rác, giữ gìn vệ sinh môi trường, giữ gìn an ninh trật tự, tránh lây lan bệnh tật cho cộng đồng. Phương tiện xe chở vật liệu phải tuân theo tải trọng đường, không chở quá tải gây hư hại đường. Xe chở vật liệu phải che phủ bạt, tránh bụi.
Trong quá trình vận hành, người dân tiếp tục duy trì tốt việc thu gom rác, tránh xả rác ra kênh mương. Nhà thầu phải thu gom rác và đổ đúng nơi quy định. Nhà thầu phải phối hợp với địa phương để vấn đề an ninh trật tự, vệ sinh, đổ thải, thông báo thời gian thi công.

2

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

Vấn đề đền bù, hỗ trợ, tái định cư. Do công trình trên tuyến là đi cũ nên cơ bản không ảnh hưởng đến đất đai và tài sản của người dân.

Không có người dân tộc thiểu số sống trong khu vực dự án.

Các hộ dân yêu cầu các đơn vị thực hiện dự án cần thực hiện theo đúng quy định liên quan.

IV. Kết luận

Các bên tham gia tham vấn thống nhất chủ trương thực hiện dự án và mong công trình sớm được triển khai.

Các hộ dân cho rằng, việc triển khai dự án đã đáp ứng những nhu cầu cơ bản của người dân trong hoạt động canh tác nông nghiệp.

Lãnh đạo địa phương mong muốn dự án sớm được triển khai.

3

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Tân Lộc, ngày 25 tháng 09 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: Sửa chữa nâng cấp hệ thống trạm, tràn vùng ngập úng huyện lộc hà

Xã Tân Lộc, huyện Lộc Hà, tỉnh Hà Tĩnh

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên
1	Trần Thị Linh	nữ	Thôn Kim Tân	
2	Nguyễn Thị Thuý	nữ	Thôn Tân Trung	
3	Nguyễn Thị Năm	nữ	Thôn Kim Tân	
4	Nguyễn Thị Hường	nữ	Thôn Tân Trung	
5	Trần Thị Thường	nữ	Thôn Kim Tân	
6	Nguyễn Thị Chi	nữ	Thôn Tân Thường	
7	Nguyễn Thị Tứ	nữ	Thôn Kim Tân	
8	Nguyễn Thị Thu	nữ	Thôn Tân Thường	
9	Nguyễn Thị Hoa	nữ	Thôn Kim Tân	
10	Nguyễn Thị Hồng	nữ	Thôn Kim Tân	
11	Nguyễn Thị Dinh	nữ	Thôn Tân Thành	
12	Nguyễn Thị Hoàn	nữ	Thôn Kim Tân	
13	Trần Thị Liễu	nữ	Thôn Kim Tân	
14	Nguyễn Thị Thu	nữ	Thôn Tân Thường	
15	Nguyễn Thị Hải	nữ	Thôn Kim Tân	
16	Nguyễn Duy Đoàn	nam	Thôn Kim Tân	
17	Phan Văn Định	nam	Thôn Tân Trung	

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên
18	Nguyễn Đình Lý	Nam	Thôn Tân Trung	lý
19	Ngô Đức Thái	Nam	Thôn Kim Tân	
20	Lê văn Hải	Nam	Thôn Kim Tân	
21	Nguyễn đình Thao	nam	Thôn Tân Trung	Thao
22	Nguyễn xuân Linh	Nam	Thôn Kim Tân	Linh
23	Nguyễn Trọng Thưởng	Nam	Thôn Kim Tân	
24	Nguyễn trọng Thao	Nam	Thôn Kim Tân	Thuật
25	Nguyễn Duy đàn	Nam	Thôn Kim Tân	
26	chu văn Cảm	Nam	Thôn Kim Tân	
27	phan đình phùng	Nam	Thôn Tân Thành	
28	Nguyễn phi Hùng	Nam	Thôn Tân Trung	
29	Ngô Đức Hùng	Nam	Thôn Tân Trung	Hùng
30	Nguyễn Doãn Lỏ	Nam	Thôn Kim Tân	lỏ
31	phan văn Linh	nam	Thôn Tân Thường	
32	phan thạch Vân	Nam	Thôn Tân Thuỷ	
33	Nguyễn ngọc thạch	Nam	Thạch châu	
34	Cu thị Lục	nữ	Thôn Tân Thường	Lục
35	Nguyễn thị nga	nữ	Thôn Tân Trung	Nga
36	phan Bá Đàn	nam	Tân Thường	Đàn
37	Nguyễn thị Thuần	nữ	Tân Thành	Thuần
38	Nguyễn thị Bình	nữ	Kim Tân	Bình
39	Nguyễn thị Sâm	nữ	Kim Tân	Sâm
40	Nguyễn Đình Tiến	nam	Tân Thường	
41	Võ thị Oanh	nữ	Tân Thuỷ	Oanh
42	Phan Thanh Sơn	Nam	Tân Thường	Sơn

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên

Đại diện cộng đồng

Đại diện UBND xã

Đại diện Ban QLDA tỉnh

Nguyễn Văn Dương

Đại diện tư vấn

Vũ Hoàng Lân

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Thinh Loc commune

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Thịnh Lộc..., ngày 25 tháng 9 năm 2014

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

BIÊN BẢN LÀM VIỆC

Hôm nay, ngày 25 tháng 9 năm 2014, tại...UBND...Xã.....chúng tôi gồm:

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

- Ông/Bà...Lê Thị Mộng Phương Chức vụ.....Tư vấn CHDI
- Ông/Bà...Dương Đức Chiến Chức vụ.....Tư vấn TDC
- Ông/Bà...Ng Thị Thu Trang.. Chức vụ....Tư vấn MT

II. Đại diện Ban QLDA tỉnh

- Ông/Bà...Trần Văn Sơn..., Chức vụ.....Ban QLDA Tỉnh
- Ông/Bà...Lê Văn Trung..., Chức vụ.....Tư vấn - Thiết kế
- Ông/Bà..... Chức vụ.....

III. Đại diện địa phương

- Ông/Bà..Nguyễn Công Tuấn Chức vụ....phó CT UBND Xã
- Ông/Bà...Trần Hữu Thiên..., Chức vụ....CT Hội nông dân
- Ông/Bà....Võ Thị Tuyến..... Chức vụ....phó CT Hội phụ nữ

Nội dung làm việc:

1.) Giới thiệu về Sơ bộ Dự án, sẽ được thực hiện Tại xã Thịnh Lộc

2.) Tư vấn thiết kế trình bày về các thông số kỹ thuật sẽ được thực hiện tại địa phương

3.) Tư vấn Chính Sách an toàn tại sẽ phổ biến nội dung Chính Sách an Toàn của Dự án

4.) Ghi nhận những ý kiến và kiến nghị của lãnh đạo địa phương và các hộ BAH

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

Nguyễn Văn Dương

Đại diện UBND xã

Nguyễn Công Trình

Đại diện tư vấn

Dương Đức Chiến

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Thịnh Lộc.., ngày 25 tháng 9 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP

CÁC TỈNH MIỀN TRUNG - KHOẢN VAY BỔ SUNG

BIÊN BẢN HỌP 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: Các tuyến nâng cấp hệ thống tưới tiêu vùng ngập úng

Xã Thịnh Lộc, huyện Lộc Hà, tỉnh Hà Tĩnh Lộc Hà

I. Thành phần tham dự:

- Ông/Bà Lê Thị Hồng Phương Chức vụ TV Cộng đồng
- Ông/Bà Đường Đức Chiến Chức vụ Tư vấn TDC
- Ông/Bà Ng Thị Thu Trang Chức vụ Tư vấn Môi trường
- Ông/Bà Trần Văn Sơn, Chức vụ Ban QLDA
- Ông/Bà Lê Văn Tùng, Chức vụ Tư vấn thiết kế
- Ông/Bà Nguyễn Công Thành Chức vụ Phó CT UBND xã
- Ông/Bà Võ Thị Tuyết, Chức vụ Phó CT Hội phụ nữ

- 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 đinh 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;

1

- 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

1.) Ban C.T.S.C.Đ sẽ được thành lập và sẽ tham gia giám sát vào các quá trình của DA

2.) Ban C.T.S.C.Đ yêu cầu được đào tạo, nâng cao năng lực cá thể thực hiện giám sát tốt hơn.

3.) Hội phụ nữ và chính quyền địa phương nhất trí sẽ tuân thủ những chính sách về bình đẳng giới và ưu tiên nhà thầu nên sử dụng nhân công tại địa phương mà không phân biệt về giới tính

III. 2. Các vấn đề về môi trường

1.) Lãnh đạo địa phương nhất trí yêu cầu nhà thầu phải cam kết các vấn đề về môi trường như: bụi, tiếng ồn đặc biệt là về vấn đề an toàn giao thông và phải có biển báo che chắn tại nơi thi công

2.) Trong quá trình sản xuất phải thông tin về thời gian thi công để bà nhân dân có chủ động đối với kế hoạch sản xuất

3.) Trong quá trình vận hành, cần phải tuân thủ theo các chính sách cũng như quy trình vận hành.

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

1) Do việc thực hiện Dự án đầu thực hiện trên các vị trí cũ, chủ yếu là nâng cấp, do đó sẽ không ảnh hưởng đến tài sản của các hộ tại địa phương.

2) Lãnh đạo địa phương cam kết sẽ thông tin tới các hộ tại xã thời gian và kế hoạch thi công cụ thể để người dân chủ động bố trí thời gian sản xuất và chủ động tận thu các sản phẩm nếu có trên tuyến thi công.

3) Những vấn đề khác: nếu trong quá trình thi công, làm hư hỏng hoặc thu hồi những tài sản của các hộ thì nhà thầu phải bồi thường cho các hộ BAH.

IV. Kết luận

1) Lãnh đạo địa phương và các hộ BAH nhất trí về việc thực hiện DA tại địa phương.

2) Lãnh đạo địa phương sẽ vận động và thông tin tới các hộ BAH về các chính sách an toàn của dự án để người dân nắm được và thực hiện.

3) Nên thi công tránh thời gian sản xuất nhằm hạn chế thiệt hại. Nếu làm ảnh hưởng đến các tài sản khác phải đền bù cho các hộ BAH.

3

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Thịnh Lộc..., ngày 25 tháng 9 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: Sửa chữa nâng cấp hệ thống tiêu vùng ngập Lộc Hà

Xã Thịnh Lộc, huyện Lộc Hà, tỉnh Hà Tĩnh

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên
	Nguyễn Văn Chỉnh		Xóm 1 – Hồng phong	Ng Văn Chỉnh
	Nguyễn Văn Hoàn		nt	Hoàn
	Nguyễn Văn Hán		Xóm 3 – Yên Điền	✓ Hán
	Nguyễn Văn Thế		Xóm 1 – Hồng phong	
	Võ Hồng Huyện		nt	
	Ng. Hải Anh		Yên Điền	
	Võ Hồng Lâm		Quang Trung	
	Ng. Thị Dung		Yên Điền	
	Lê Thị Trang		Quang Trung	Trang
	Phạm Thị Linh		Hồng phong	Linh
	Võ Thị Hảo		nt	Hảo
	Ng. Thị Vân		Quang Trung	Vân
	Ng Thị Hường		nt	Hường
	Dương Thị Linh		Hồng phong	Linh
	Ng. Văn Chiến		Hồng phong	Chiến
	Võ Hồng Đức		Quang Trung	Hạnh
	Lê Doãn Huân		Quang Trung	✓ Huân

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên
	Dương Thị Hường		Quang Trung	✓ Hường
	Lê Doãn Duê		nt	✓ Duê
	Trần Thị Hiền		nt	Hiền
	Võ Thị ~~Linh~~ Lý		Hồng phong	Lý
	Võ Thị Linh	Nữ	nt	✓ Linh
	Lê Doãn Nhân		Yên Điền	✓ Nhân
	Võ Hồng Chuẩn		Yên Điền	✓ Chuẩn
	Võ Hồng Lập		Yên Điền	Võ Hồng Lập
	phan Thị Vân		〃	Vân
	Ng Hải Anh		〃	Anh
	Trần Thị Tuyết		〃	Tuyết
	Ng Thị Sen	Nữ	Y Điền	Sen
	Lê Thị Lý	Nữ	Hồng phong	Lý
	Ng Thị Tâm	Nữ	V. Phong	tâm
	Trần Quốc Danh		Quang Trung	Danh
	Võ Hồng Lập		Yên Điền	Lập
	Dương Thanh Khiêm		H. phong	Khiêm
	Lê Doãn Quỳnh		Quang Trung	Quỳnh
	Ng công Trình		PCT. UB ND xã	
	Trần Hữu Thìn		Chủ tịch hội nông dân	Thìn
	Nguyễn Đình Tiến		Yên Điền	Tiến
	Võ Thị Tuyết		Yên Điền	

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên

Đại diện cộng đồng

Đại diện UBND xã

Nguyễn Công Trình

Đại diện Ban QLDA tỉnh

Nguyễn Văn Dương

Đại diện tư vấn

Dương Đức Chiến

Photos of public consultation meeting

Photo 11: Public consultation in Tan Loc commune

Photo 12: Public consultation in Tan Loc commune

Annex 3: Data Source

1. PPMU of Ha Tinh province, Subproject Investment Report (SIR) of lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district, 2014.
2. PPMU of Ha Tinh province, Basic Design Explanation of lining the irrigation and drainage canal systems and road of the flooded area in Loc Ha district subproject, 2014.
3. Tan Loc People's Committee, Annual Report on Social Economy, December 2013.
4. Thinh Loc Commune People's Committee, Annual Report on Social Economy, December 2013.

Annex 4: Environmental monitoring forms

Environmental Compliance Monitoring Form for Construction Package

Part 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?			
Score (1-10; 10 total)			(%)

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?			
Score (11-16; 6 total)			(%)

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?			
Score (17-21; 5 total)			(%)

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?			
Score (22-23; 2 total)			(%)

Outcome of Public Consultation:

Date: _____ Location: _____

Topics covered in presentation: _____
_____

Comments from Attendees:

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?			
Score (24-35; 12 total)			(%)

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?			
Score (36-43; 8 total)			(%)

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?			
Score (44-50; 7 total)			(%)

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

Section 2: Community Complaints

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

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 5: Environmental mitigation measure to include into bid documents

POTENTIAL IMPACTS	MITIGATION MEASURES
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	▪ Operation license of Tung Son and Hong Loc borrow pits have been approved by Ha Tinh DONRE. The operations licenses and approved environmental certificate need to be checked before starting purchase soil from these pits. ▪ In the exploitation process of Tung Son and Hong Loc borrow pits, Tung Loc and Hong Loc communes, contractor should follow environmental protection issues, including: - Working machines must be under periodically quality controlled; - Oil and other chemical pollutants from working machines should be strictly controlled and stored separately, avoiding leakages; - Workers should use protective equipment while working within the Site; - Temporary earth drainage system and ditch should be formed to store waste water safely in rainy season to reduce turbidity before releasing water into cultivated area; - Water should be regularly sprayed within borrow areas to reduce dust generation ▪ Cover trucks that transport materials purchased from the borrow pits and mines (along provincial road No. 9, road No.22/12 and communal roads) ▪ Construction vehicles, machines and equipment need 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.
Erosion or sedimentation caused during clearing or earthworks	▪ Install sediment fences and/or sediment traps at intersections of the proposed drainage canal and the existing main drainage canals (intersections between Loi Ma - Cau Coc canal and Dong Doi main drainage canal; between Tan Loc - Binh Loc canal an Hong Tan main drainage canal) ▪ Construct temporary drainage canals to reducing affects on residential area in Tan Loc, Binh Loc, An Loc and Hong Loc communes; ▪ Upgrading main weir of reservoir need to be implemented section by section and provide vegetable cover as soon as possible when excavation completed. ▪ Avoid excavation activities during the rainy season where possible.
Impacts arising from temporary storage areas including dust, noise and water quality	▪ Store material location need to be at least 300 m away from the sensitive receivers such as Hong Tan primary and secondary schools, Tan Loc primary school and kindergarten, An Loc primary school, Lu temple… ▪ Building up appropriate plan of material management to reduce material stagnated on the site; ▪ Store material at high place with impervious surface and at least 10 m away from the water bodies (water rice fields, ponds, existing canals). ▪ Cover material stockpile with canvas when they are not in used and during rainy; ▪ Material transportation is strictly forbidden in the evening when stores are located next to residential areas.
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated	▪ Store chemicals in secure area, with concrete floor and weather-proof roof and at least 10 m away from water rice fields, ponds and existing drainage canals (Dong Doi and Hong Tan main drainage canals; ▪ Ensure construction equipment and vehicles are maintained in good conditions to avoid leakage; ▪ Use mobile sanitary toilets following regulations of Health Ministry and washing facilities at construction camps (*Circular No 27/2011/TT – BYT promulgating on National technical regulation on Hygienic conditions for*

POTENTIAL IMPACTS	MITIGATION MEASURES
soils	*Latrines/ QCVN 01: 2011/BYT on National technical regulation on Hygienic conditions for Latrines*) ▪ Provide rubbish bins and containers at camping sites and construction sites. ▪ Signed contract with local environmental company to regularly transport waste to the Loc Ha dumping sites; ▪ Management of hazardous materials and waste need to be followed the requirements which stated in Decree 36/2015/TT-BTNMT; ▪ Hazardous materials spilling out unexpectedly to be cleaned, reported and monitored; ▪ The wastewater and solid waste will not be allowed to through on surrounding water bodies (water rice fields, ponds, Dong Doi and Hong Tan drainage canals)
Noise, dust or exhaust from construction equipment and transport activities	▪ Spray water at least one time per day in the dry/hot day in transportation road section goes through the sensitive areas (5 schools and kindergarten, Loc Ha General Hospital…) ▪ Cover all trucks carrying raw materials to and from the construction area and along the transport routes as provincial road No. 09, road no.22/12 and the communal roads of An Loc, Tan Loc, Binh Loc and Hong Loc communes; ▪ Mobile concrete batching equipment to be arranged a distance of 500m away from residential areas of An Loc, Tan Loc, Binh Loc, Hong Loc communes and only allow operating during daytime. ▪ Operation schedule of noise generated equipment/vehicles need to be avoid the rest time of local people, especially in the location close to residential areas in An Loc, Tan Loc, Binh Loc and Hong Loc communes and along the transport route of provincial road No. 9, road No.22/12 and communal roads; ▪ Provide adequate protective equipment for workers who run noise generated machines ▪ Equipment needs to meet standards of exhaust, noise, and vibration as regulated by the Government and they need to be properly maintained.
Increasing the flooding area and time	▪ Inform construction schedule/ scope in advance to Tan Loc, An Loc, Binh Loc, Hong Loc and Thinh Loc CPCs. ▪ Discuss with agricultural and irrigation staff of Loc Ha DPC to identify suitable construction time. ▪ Complete construction section by section before start a new one to avoid long construction time. ▪ The construction of drainage canal will be implemented in dry season only. ▪ Construction equipment shall not be allowed to take place on the irrigation and drainage canals
Affects on traffic or conditions for property access	▪ Inform construction schedule and scope in advance to Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs. ▪ Avoid material transportation in the rush hours when student go to schools, people go to work and back home (6h30 7h30 am; 11h30-13h30; 16h30-17h30. ▪ Install signal lamps and sign panels at crossing points with road branches or close to residential areas. ▪ Limit the speed of means of transport on the route; ▪ In case unavoidable block the access to schools, kindergarten, medical clinic… the contractors should construct a temporary access route. ▪ Install traffic signals at site to regulate and limited speed of vehicles or signals of work site, especially at the intersections where closed to cultivation area of local people in Binh Loc, An Loc, Tan Loc and Hong Loc communes; ▪ Provide temporary access for local people if any bock of road happened during construction;

POTENTIAL IMPACTS	MITIGATION MEASURES
	▪ Reinstate as pre-project condition for any damage caused by construction activities.
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	▪ Consulting the sub-project engineering staff to identify public infrastructure and avoid or minimize physical impacts on their infrastructures; ▪ Work with local authorities to obtain agreement in using any public facilities; ▪ Limit the speed and load of material transportation truck in rainy season (April to October) to avoid accidents or damage road; ▪ Contractors must repair local roads, electricity lines and other local infrastructure if they are damaged by the construction activities. ▪ Warning and set rule for workers to follow traffic regulations (limit the velocity of trucks especially when travel in the sensitive areas of schools, kindergartens, hospital, temple…); ▪ Install warning signs and avoid crashes to electric poles and houses.
Generation of excess spoil	▪ Utilise excavated spoil for filling purpose, as much as possible, to minimize the volume of excess spoil (estimated volume of filling soil is 30653 m^3 and excavated soil is about 42200 m^3); ▪ Temporary spoil disposal site shall be located at least 50 m from water bodies, like water rice fields, ponds, Dong Doi main drainage canal, Hong Tan main drainage canal, and shall be protected from erosion by avoiding formation of steep slopes; ▪ Unused excavated soil need to be transported to and disposed at Loc Ha dumping site.
Construction workers cause social disruption	▪ Consult with Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs to arrange accommodation for workers (to avoid any negative impacts on local people's activities) and register temporary residence card for them; ▪ Recruit local people for simple work such as soil moving, road compaction... ▪ Consider house leasing in locality in comparison with site camps and consultation with competent staff in planning local housing for workers in the local community. ▪ Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions; ▪ Distribute guidance leaflets to workers or invite workers to disseminate about the prevention of infectious diseases and diseases that may occur in the areas of the shack camp. ▪ 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.
Risk to health and safety to local people or construction workers	▪ Inform Tan Loc, Binh Loc, An Loc, Hong Loc and Thinh Loc CPCs in advance on construction schedule and scope ▪ Consult representatives of Hong Tan Primary and Secondary Schools, Tan Loc Primary School and Kindergarten, An Loc Primary School, Loc Ha General Hospital, Lu Temple and My Loc church on construction schedule and scope, working hour… before commencement. ▪ Collaborate with infrastructure staff of the five CPCs to install warning sign boards, road hump (if applicable) near the sensitive areas; ▪ Provide workers with full safety equipment and train them how to use properly. ▪ Install mobile toilets at worker camps and provide sufficient domestic water
Causes waste disposal problems from solid waste generated during construction activity	▪ 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; ▪ Collect used oil and grease in a place with cover roof and impervious ground and at least 10 m far from the water body;

POTENTIAL IMPACTS	MITIGATION MEASURES
or municipal waste generated in construction camps	▪ Collect solid waste regularly and transport to Loc Ha dumping site – 5 km away from the subproject area; ▪ Management of construction waste, domestic waste and hazardous waste as per proposed on waste management items.
Impacts on irrigation activities	▪ The Contractor need coordinate with irrigation authority (Loc Ha irrigation exploitation management enterprise), the 5 commune's irrigation staffs and relevant cultivation households during upgrading Lower Khe Hao reservoir and the irrigation canal systems to reach agreement on water supply time (when construction suspension), construction time (should be implemented at the time when irrigation activities are not done); ▪ Upgrading Lower Khe Hao reservoirs and the irrigation canal system of Khe Hao and Dong Ho reservoirs in dry season with application of construction time when irrigation activities are not implemented. Construct Loi Ma - Thien Thinh, Tan Loc Binh Loc roads and Lower Khe Hao Management Road in the irrigation time instead. ▪ If construction time could not avoid water supply time, divert canal must be built to transfer water for rice fields under the subproject area ▪ Inform commune's irrigation staff, irrigation exploitation enterprise or relevant authorities in advance so they can make plan on their own initiative; ▪ Ha Tinh PPMU and the Contractor need pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to water supply cut off for construction activities.
Impact by impropriate environmental recovery responsibilities	▪ Remove all of the construction machines and construction tools out of the construction sites upon construction complete. ▪ Upon construction complete, perform industrial clean at that site and temporary acquired land area and before hand over the land area back to local authorities ▪ Compensate adequately for the temporary acquired land area that could not be recovered ▪ Plant tree to recover the vegetation coverage. ▪ Taking photos of the clearance site before clearance and after recovery process complete to ensure the vegetation coverage has been recovered adequately.