

# Initial Environmental Examination

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August, 2017

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

Subproject: Development of Infrastructure for Vegetable  
Production in An Hai Commune, Ninh Phuoc District,  
Ninh Thuan Province

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

## CURRENCY EQUIVALENTS

(As of 15 September 2014)

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

## ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected persons
APC	Agricultural Production Cooperative
CC	Construction Consultant
CEP	Commitment on Environmental Protection
CPC	Communal People's committee
CPMU	Central Project Management Unit
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
DPC	District People's Committee
EIAR	Environmental Impact Assessment Report
EMDF	Ethnic Minority Development Framework
EMP	Environmental Management Plan
DARD	Department of Agriculture and Rural Development
FPD	Forest Protection Department
IEE	Initial Environmental Examination
IMC	Irrigation Management Company
IPM	Integrated Pest Management
IRDPCP	Integrated Rural Development Project in Central Provinces
LIC	Loan Implementation Consultant
MONRE	Ministry of Natural Resources and Environment
PC	People's Committee
PPC	Provincial Peoples Committee
PPMU	Provincial Project Management Unit
RF	Resettlement Framework
SEMP	Site Environmental Management Plan
SIR	Subproject Investment Report
TPC	Town People's Committee
UXO	Unexploded Ordnance

## **WEIGHTS AND MEASURES**

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

## **NOTE**

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

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## **1. INTRODUCTION**

1. The Integrated Rural Development Sector Project in the Central Provinces (IRDPCP) is being implemented through a sector loan from the Asian Development Bank (ADB). The Ministry of Agriculture and Rural Development (MARD) is the executing agency for the sector loan.
2. Due to the success of the project, ADB proposes to provide Additional Financing of \$70 million for a second phase of the project, which will be implemented in 6 of the original 13 provinces. The IRDSPCP 2nd phase is located in 6 provinces in central Viet Nam and has involved construction of medium scale rural infrastructure of the following types:
  - (1) Irrigation, drainage and flood control infrastructure including river embankments, sluices and salinity intrusion control structures;
  - (2) Rural roads including bridges and culverts.
3. As part of IRDPCP 2nd phase, An Hai safety vegetable production infrastructure development subproject will be constructed in An Hai Commune of Ninh Phuoc District Ninh Thuan Province
4. This Initial Environmental Examination/Commitment on Environmental Protection Plan (IEE/EPP) document has been prepared to meet the environmental safeguards requirements of the ADB<sup>1</sup> and GOV<sup>2</sup>. The IEE/EPP contains the following information:
  - (i) Section I Introduction
  - (ii) Section II contains a description of the subproject;
  - (iii) Section III contains a description of environmental conditions in the vicinity of the subproject;
  - (iv) Section IV contains a describes potential environmental impacts of the subproject;
  - (v) Section V contains the environmental management plan including mitigation measures, monitoring system and cost estimation for the implementation of Environmental Monitoring System;
  - (vi) Section VI contains activities description on community consultation and subproject disclosure;
  - (vii) Section VII contains conclusion and recommendation including summarization of main impacts and typical mitigation measures in the subproject's implementation.

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<sup>1</sup> ADB safeguard policy statement (SPS) 2009

<sup>2</sup> Law on Environment Protection (Revised) 2015; Decree 18/2015/NĐ-CP dated April 01, 2015 and circular No. 27/2015/TT-BTNMT dated July on May 29, 2015

## 2. PROJECT DESCRIPTION

**Table 1. General information of subproject**

DATA ITEM	SUBPROJECT DATA
<b>GENERAL INFORMATION</b>	
Subproject Name	An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province
Subproject Type	Irrigation
Project owner	Department of Agriculture and Rural Development, Ninh Thuan Province
Address of Project owner	No. 36 – 16/4 road, Phan Rang – Thap Cham City, Ninh Thuan province
Name and Title of Head of Project owner	Nguyen Vinh Quang Title : Director
Telephone, fax and email details of Project owner	0683.834152; FAX : 0683.823730
Name of Environmental Officer of PPMU	Tran Ba Luat
Telephone, fax and email details of PPMU Environmental Officer	0915 017 367 Email: tluat3320@gmail.com
<b>SUBPROJECT DESCRIPTION</b>	
New project or rehabilitation project	the Project components included : (i) Repair of Tuan Tu dam, (ii) build a pump station level 1, (iii) Siltation tanks, (iv) 7 new power-substations, (v) build a pumping stations level 2, (vi) build the main and the branch pipeline system (from pump station level 1 to intermediate tanks), (vii) build 15 intermediate tanks: capacity 500 m <sup>3</sup> each & each tank is responsible to irrigate about 20 ha, (viii) build a pipeline from the pump station level 2 to fields, (ix) build 14 pumping stations level 2 and accessories for supplying pressured water to irrigation areas, (x) build a branch and main pipeline system and works on the route from pump stations level 2 to connect with on-farm system, (xi) build on-farm irrigation system, (xii) Build a wholesale market of a total surface of 2,500 m <sup>2</sup> .
Surface and underground water	Surface water
Design Irrigation Frequency	P = 85%
Identification of water source	From Lu river though Tuan Tu Weir .

**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
	<p>Tuan Tu weir was built on Lu river, a tributary of Dinh River. In the project area, Dinh is river flowing through Ninh Phuoc district for a length of 38 km. The catchment area is of 326 km<sup>2</sup>.</p> <ul style="list-style-type: none"> <li>▪ Low flow to the project area corresponding to <math>P = 85\%</math>, <math>Q_{85\%} = 0.69 \text{ m}^3/\text{s}</math>.</li> <li>▪ Irrigation rate: 50 m<sup>3</sup>/ha-day.</li> <li>▪ Project area: 300 ha</li> <li>▪ Total irrigation rate: 15,000 m<sup>3</sup>/day</li> </ul>
Water source used for living or not?	<p>No</p> <p>Water from Tuan Tu weir is used only for irrigation purpose in cultivated land of upstream of Tuan Tu weir</p>
Area to be irrigated	300 ha
Purpose of the subproject	<p>The investment project will help ensure pro-active irrigation of the entire agricultural land of An Hai commune. The project will help improve the performance of existing irrigation system (Tuan Tu Weir) which has been built since the 80s of the last century.</p> <p>Developing infrastructure of advanced and water-saving irrigation scheme for 300ha of agriculture land in the vegetable production area in An Hai Commune, Ninh Phuoc district, Ninh Thuan province.</p>
Repairing & new building of headwork	<p>a. <i>State government investment ( though ADB Loan Fund No. 3173-VIE )</i></p> <ul style="list-style-type: none"> <li>• Repair of Tuan Tu weir (Reinforce the energy dissipation pool, Reinforce road/95 m along the old route in the upper right side of the Tuan Tu weir, reinforce the right bank of the weir, build embankment walls to protect the downstream banks on the side of fields of a length of 58m)</li> <li>• Construction of new headwork (pumping stations, siltation tanks and an electric-power substation);</li> <li>• Construction of pumping station (level 1)</li> <li>• Construction of siltation tank</li> <li>• Construction of 6 electric-power substations (2*75 KVA + 4*45 KVA) and a low voltage electricity grid for the 15 scattered tanks</li> <li>• Construction of 1 pumping station level 2 for the pilot lot</li> <li>• Construction of 15 tanks of 500 m<sup>3</sup> each in the irrigation area, each irrigating 20 ha;</li> <li>• Construction of a wholesale market of 2,500 m<sup>2</sup>.</li> <li>• Building a management road to the raw water pumping station.</li> </ul> <p>b. <i>Businesses and people invest</i></p> <ul style="list-style-type: none"> <li>• Construction of 14 pumping stations level 2 and accessories to supply pressured water to the irrigation</li> </ul>



**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
	<p>areas</p> <ul style="list-style-type: none"> <li>Construction of the main and branch pipelines and structures of the system to connect the pump stations level 2 with on-farm irrigation system for the remaining 280 ha.</li> <li>Construction of on-farm irrigation system.</li> </ul>
Main pipelines and facilities on pipelines	<ul style="list-style-type: none"> <li>Build the main and the branch pipeline system (from pump station level 1 to intermediate tanks) include: HDPE pipe type of total length of 9,643 km of DN280 to DN500; 27m of D500 steel pipe and 3.6m of D550mm steel pipe</li> <li>Build a pipeline from the pump station level 2 to fields for a pilot irrigation area of 20 ha, with a total length of 2,183m, HDPE and PVC pipe of diameter DN225 to DN75mm.</li> <li>Build a main pipeline system, branch and works on the route from pump stations level 2 to connect with on-farm system for the remaining 280 ha.</li> <li>Build on-farm irrigation system</li> </ul>
Length of pipeline	<p>Total length of main and branch pipelines ( grade 1 ) from the water pumping station to 15 tanks : 9,673.6 m</p> <p>Total length of booster pipelines ( grade 2) from tanks to irrigation areas : 2,183 m</p>
The width and length of management road	<p>Length of management road : 900 m</p> <p>Width: 3.5 m ,</p>
Road surface (lining asphalt, concrete, soil and so on)	Cement concrete, M200, 20cm thick
Climate change: Is the Project area subject to hazards such as climate changes? If yes climate change is expected to result in more intense but less frequent rainfall events and longer dry seasons and water capture systems may not be designed to accommodate these changes.	<p>According to "Report on Climate Change Scenarios of Vietnam, MONRE-2016", with the medium emissions scenario (RCP 4.5):</p> <p>Annual rainfall by early 21st century would increase by 5÷10% in general over most parts of the country; by mid- and late 21st century, annual rainfall would increase by 5÷15%, particularly in Ninh Thuan province annual rainfall would increase 12.3%.</p> <p>The rainfall indicator differs strongly between the climate changing scenario in 2012 and in 2015. Rainfall increase, as forecast in 2012, was estimated between 2-10%; now the scientists revised it to be 5-15%. High rainfall increases in rain season while in dry season rainfall tends to decrease</p> <p>Droughts would become more severe in some regions because of increased temperatures and rainfall deficits in the dry season (e.g. spring and summer in the South Central, including Ninh Thuan Province )</p> <p>Based on the above climate changes, the design of the SP should carefully take into account parameter on low flow to the project area corresponding to P = 85% in dry season ( from December to August of next year) that issue of the effects of the dry season rainfall for the subproject produce.</p>

**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
<b>CONSTRUCTION ACTIVITIES</b>	
Construction commencement date (month/year)	Expect Quarter 1 of 2018
Construction completion date (month/year)	Expect Quarter 4 2018
Number of construction workers	Approx. about 120 workers (average)
Construction camp required (Yes/No)	Yes. worker-based camps/ rent local people houses , 3 camps estimated
Construction in rainy season (Yes/No)	Yes, in case of favorable weather conditions
Number and conditions construction vehicles and equipment	<p>Estimated</p> <ul style="list-style-type: none"> <li>+ Excavators : 4 units;</li> <li>+ Bulldozers 108 CV : 4 units; Dump-trucks 5 tons &amp; 7 tons : 6 units &amp; 3 units ; Compactors of all kinds: 20 units;</li> <li>+ Water pumps 10 CV: 03 units; Concrete mixer 500 l &amp; 250 l : 2 units &amp; 4 units; Water spraying vehicles 5 m<sup>3</sup>: 02 unit;</li> <li>+ Drilling machine D 42 mm : 11 units</li> <li>+ Crane truck 10 T : 1 unit</li> <li>+ Air compressor : 4 units</li> </ul>
Location and square of disposal site and sources of materials	<p><u>Permanent disposal site:</u></p> <p>Discarded soil will be dumped at three disposal areas in Phuoc Hai , An Hai Communes, about 1.0 – 3.5 km from the sites and approved by Phuoc Hai and An Hai CPCs (details in Appendix 4). These include: i) disposal site Nr.1 in Tu Tam village- Phuoc Hai commune located at 1.0 km distance from the construction site (head works) of disposal capacity of 6500 m<sup>3</sup>; and ii) disposal site Nr.2 in An Thanh No1 village - An Hai Commune, distance 3.0 Km from the construction site (8 water tanks ) with disposal capacity of 1500 m<sup>3</sup>, and iii) disposal site Nr. 3 Nam Cuong village - An Hai Commune, at a distance of 1.0 km from the construction site (7 water tanks ) with disposal capacity of 3000 m<sup>3</sup></p> <p><u>Temporary material storage site:</u></p> <p>Temporary material yard will be determined by contractors during construction stage. However, this should be located at the CPC 's yard, in a public premise or in rented local house;</p> <p>Sources of materials:</p> <p>Sand will be provided by a Dinh river exploitation located 10 km from the project site operating under a permission of local authorities of Ninh Phuoc district.</p> <p>Embankment soil : will be purchased in Deo Cau borrow pit in Nhon Son Commune. Ninh Son District, Ninh Thuan Province , located about 12-15 km from the construction site.</p>

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An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

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DATA ITEM	SUBPROJECT DATA																																																																												
	Other construction materials such as cement, steel, bricks and others will be provided from services in Phan Rang City, about 5-10 km from the construction site.																																																																												
Quantity of excavated soil & filling soil	Excavated soil of all types : 40,286 m <sup>3</sup> Filling soil of all types : 24,938 m <sup>3</sup> Balance : 15,348 m3 Discarded soil quantity: 3,069 m <sup>3</sup> (20% of the above balance) Part of the discarded soil will be dumped at three disposal areas in Phuoc Hai and An Hai Commune, Ninh Phuoc District & approved by Phuoc Hai & An Hai's CPC and part will be dumped at local peoples gardens, about 200 - 500 m far apart from the Site.																																																																												
Balancing and management measures for excavated/excess soil	Suitable excavated soil will be used for backfilling of main / booster pipelines & management road.																																																																												
Quantity of construction materials	<table><tr><th>No</th><th>Item</th><th>Unit</th><th>Quantity</th></tr><tr><td>1</td><td>Pipe line DN500</td><td>m</td><td>1651</td></tr><tr><td>2</td><td>Pipe line DN450</td><td>m</td><td>322</td></tr><tr><td>3</td><td>Pipe line DN400</td><td>m</td><td>702</td></tr><tr><td>4</td><td>Pipe line DN315</td><td>m</td><td>1958</td></tr><tr><td>5</td><td>Pipe line DN250</td><td>m</td><td>316</td></tr><tr><td>6</td><td>Pipe line DN225</td><td>m</td><td>731</td></tr><tr><td>7</td><td>Pipe line DN180</td><td>m</td><td>434</td></tr><tr><td>8</td><td>Pipe line DN160</td><td>m</td><td>1671</td></tr><tr><td>9</td><td>Concrete for foundation line M100</td><td>m<sup>3</sup></td><td>88</td></tr><tr><td>10</td><td>Formwork</td><td>m<sup>2</sup></td><td>136</td></tr><tr><td>11</td><td>Reinforce concrete</td><td>m<sup>3</sup></td><td>1,354</td></tr><tr><td>12</td><td>Stone</td><td>m<sup>3</sup></td><td>289</td></tr><tr><td>13</td><td>Brick</td><td>m<sup>3</sup></td><td>153</td></tr><tr><td>14</td><td>Steel</td><td>Ton</td><td>58,2</td></tr><tr><td>15</td><td>Sand</td><td>100m<sup>3</sup></td><td>177,35</td></tr><tr><td>16</td><td>Macadam</td><td>m<sup>3</sup></td><td>1,969</td></tr><tr><td>17</td><td>Ashlar</td><td>m3</td><td>200</td></tr><tr><td>18</td><td>Bentonite</td><td>m<sup>2</sup></td><td>10500</td></tr></table>	No	Item	Unit	Quantity	1	Pipe line DN500	m	1651	2	Pipe line DN450	m	322	3	Pipe line DN400	m	702	4	Pipe line DN315	m	1958	5	Pipe line DN250	m	316	6	Pipe line DN225	m	731	7	Pipe line DN180	m	434	8	Pipe line DN160	m	1671	9	Concrete for foundation line M100	m <sup>3</sup>	88	10	Formwork	m <sup>2</sup>	136	11	Reinforce concrete	m <sup>3</sup>	1,354	12	Stone	m <sup>3</sup>	289	13	Brick	m <sup>3</sup>	153	14	Steel	Ton	58,2	15	Sand	100m <sup>3</sup>	177,35	16	Macadam	m <sup>3</sup>	1,969	17	Ashlar	m3	200	18	Bentonite	m <sup>2</sup>	10500
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OPERATION AND MAINTENANCE ACTIVITIES																																																																													
Design Capacity at pipeline : (m3/s)	Design Capacity : 0.26 m <sup>3</sup> /s Irrigation rate: 50 m3/ha/day.																																																																												
Subproject irrigated area (ha)	Total 300 ha to be irrigated in 3 villages: Tuan Tu, Nam Cuong, Hoa Thach, presently irrigated by groundwater; including 160 ha irrigated through surface irrigation system																																																																												

**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
Cycle of water treatment	<p>Water source for An Hai vegetation irrigation area will be extracted from Tuan Tu weir on Lu river, a tributary of Dinh River</p> <p>The irrigation water for safe vegetables should be of good quality; water in Lu river diverted from Tuan Tu Dam in the dry season is mainly the water drained from the upstream irrigation areas, so it is necessary to treated it in siltation tanks before using it to irrigate vegetables.</p> <p>Water supply requirement is 15,000 m<sup>3</sup>/day (16 h pumping); flowing speed is 10mm/s; tank siltation surface is F-722.2 m<sup>2</sup>; siltation tank has a trapezoidal cross-section. Tank bottom B = 6m, elevation -1.0m L = 72m, roof m = 2; bank elevation 4.0m; Structure: bottom slab of reinforced concrete (M200), over a 30 cm thick layer of stone masonry (M100); reinforced concrete (M250) roof/15cm thick</p>
Periodically time for maintenance activities	Yearly
Responsibility for Operation and Maintenance	<p>Results of community consultation on management options , organizational management models are as following</p> <ul style="list-style-type: none"> <li>- Model 1: IMC in charge of headwork and APC (Agricultural Production Co-operative /WUO (Water Use Organization) in charge of on-farm irrigation system;</li> <li>- Model 2: IMC manages the headwork; Enterprise invest and manage the on-farm irrigation system and participate in production linkage with farmers;</li> <li>- Model 3: Enterprise manages the entire irrigation system.</li> </ul> <p>During the construction of the irrigation system, local authority will select suitable management unit that meets policy of the state and expectations of farmers. In particular, priority is given to all economic components of interest in the investment and management of the irrigation system with production linkage with local farmers to improve irrigation systems and increase added value of agricultural products in the project area.</p>
Maintenance activities	<p>The agency is responsible for the operation and maintenance of the works after completion. The O&amp;M of the irrigation system include the following main tasks:</p> <p><i>i. Management activities</i></p> <ul style="list-style-type: none"> <li>• Management and operation of works in order to maximize benefits of water resources for production, including management, operation, monitoring of head works (pumping stations, siltation canals, substations, Tuan Tu Dam and pipeline and structures on pipeline), of level 2 (pumping station, intermediate tank, secondary irrigation system) and on-farm irrigation system.</li> <li>• Management and operation of main water supply pipeline to the tanks, including: weekly preparation of detailed irrigation planning for each water delivery, opening/closing</li> </ul>

DATA ITEM	SUBPROJECT DATA
	<p>of water regulation valves as planned; inspection and protection of pipeline; keeping track of the operation of the entire piping system.</p> <ul style="list-style-type: none"> <li>• Management of level 2 pumping station, intermediate tanks: preparation of irrigation planning for each zone, opening/closing water regulation valves of tanks, monitoring and recording of the operation of the intermediate tanks and pumping stations level 2.</li> <li>• Water management at field level, including: preparation of irrigation planning for each type of crop in each growing period; opening/closing regulators to get water into canals as planned; monitoring and protecting canal system, sluices and spillway; keeping track of the operation of branch canals</li> </ul> <p>ii. <i>Maintenance activities</i></p> <ul style="list-style-type: none"> <li>• Regular operate and maintain: <ul style="list-style-type: none"> <li>a) Patrolling, checking and reporting on the status of pumping station, suction basin, pipeline, tank and related works,</li> <li>b) Regularly lubricating all mechanical components of pump stations and sluice gates on canals</li> <li>c) Replacing damaged steel components</li> </ul> </li> <li>• Periodically operate and maintain <ul style="list-style-type: none"> <li>a) Identify upgrading and improvement needs of irrigation works,</li> <li>b) Determine upgrading/improving costs, and</li> <li>c) Carry out Economic analysis of the upgrading/improvement projects</li> </ul> </li> </ul> <p>Periodical maintenance is carried out every 10 years, including the replacement of end-of-life equipment according to manufacturer's instructions; handling relatively large items of the system, dredging all canals to ensure water delivery. This cost is estimated as equal to 10% of the initial equipment investment. The detailed work shall be based on the economic-technical report that complies with regulations on the management of State investments.</p> <ul style="list-style-type: none"> <li>• Operation and maintenance in case of emergency: <ul style="list-style-type: none"> <li>- Carry out repair for broken and downgraded items.</li> <li>- Carry out check, propose technical method and cost for repairing based on current regulation of State.</li> </ul> </li> </ul>
<b>RESETTLEMENT AND LAND ACQUISITION<sup>3</sup></b>	
Number of Affected households	Total land acquisition : No
Number of severely affected person	Nil

<sup>3</sup> This data is obtained from SIR

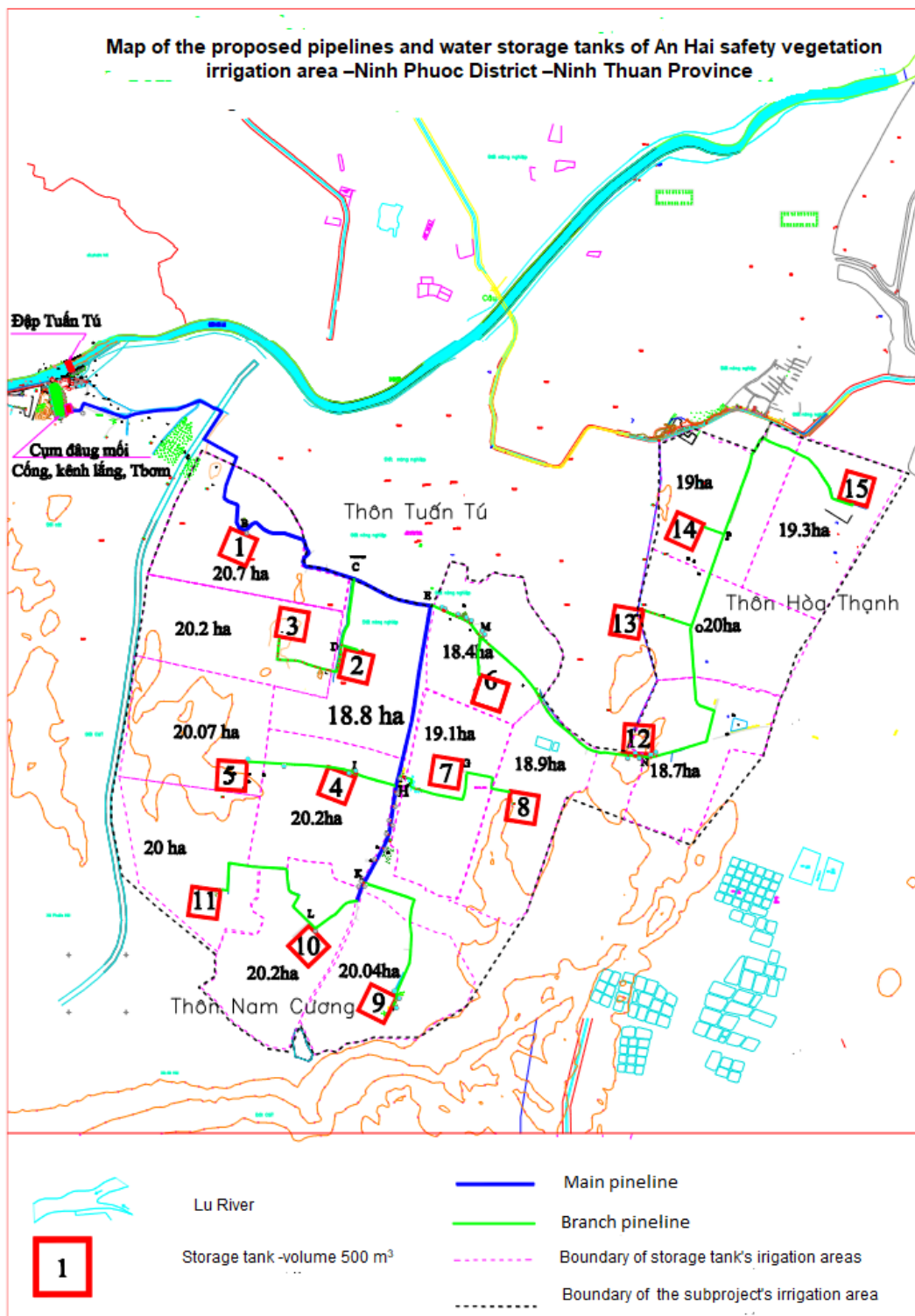
**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA	
Number of APs that must relocate	Nil	
Total land area to be acquired	Temporary: Main pipelines are installed underground and only temporary land is occupied during their installation with insignificant impact.	Permanent: 2.08 ha (Lands for the construction of pumping station headwork, intermediate tanks and level 2 pumping stations and market are agriculture land that will be permanently acquired) – Source : from SIR, 2017
Agricultural land area to be acquired (ha)	Temporary: to be determined in DMS	Permanent: 2.08 ha ( from SIR)
Forestry land area to be acquired (ha)	Temporary- Nil	Permanent - Nil
Garden land to be acquired (ha)	Temporary- Nil	Permanent - Nil
Aqua-cultural land to be acquired (ha)		
Residential land to be acquired (ha)	Temporary- Nil	Permanent - Nil
Other land to be acquired (ha)	Nil	Nil
<b>SUBPROJECT COST</b>		
Total subproject cost (VND and \$USD)	<p>Total investment fund of the project: <b>VND 120,817,336,096, equivalent to USD 5,323,522 (1 USD = VND 22,695) of with.</b></p> <ul style="list-style-type: none"> <li>▪ ADB's contribute VND 57,883,613,000, equivalent to USD 2,550,500.683;</li> <li>▪ Remaining funding, including Counterpart Fund, capital of business companies and of local farmers: 62,933,723,096 VND equivalent 2,773,022 USD.</li> </ul> <p>(from SIR)</p>	

**Figure 1. Map of the proposed pipelines and water tanks of An Hai safety vegetation irrigation area –Ninh Phuoc District –Ninh Thuan Province**





### 3. DESCRIPTION OF EXISTING ENVIRONMENT

**Table 2. Environmental baseline**

DATA ITEM	SUBPROJECT DATA
<b>PROJECT LOCATION</b>	
Commune(s):	An Hai Commune
District:	Ninh Phuoc
Province:	Ninh Thuan
Geographical position	<p>Ninh Phuoc District is a coastal district of Ninh Thuan Province and is located in the Southern part of the province. The North of the district borders Phan Rang-Thap Cham city and Ninh Son district; the East borders the sea; the district borders Thuan Nam district to the west and South.</p> <p>Geographical position:</p> <ul style="list-style-type: none"> <li>- The project area in An Hai commune is located in the plain and the lowland area of Ninh Phuoc district has an elevation ranging from 4m to 11m; Currently the project area is being grown with vegetables by local farmers and the rest is grown with flower, due to shortage of water needed for other crops.</li> </ul> <p>The coordinates of the subproject is as follows:</p> <p>Latitude: From 11°41'78"N to 11°67'.06.77"N</p> <p>Longitude: From: 108°70' 55"E to: 109°05'.45"E</p>
<b>NATURAL ENVIRONMENT CONDITIONS</b>	
Air quality	<p>Subproject area is agricultural land and its air quality is in general good. The subproject region presents rural characteristics, including agricultural production activities and local agricultural services, no ongoing construction activities. There is no sign of high dust pollution, except in dry season when some dust is generated from passing vehicles on local earth road.</p>
Noise and vibration	<p>Because it is a rural area, noise and vibration are very low. Noise is mainly generated by agricultural production activities, especially in harvesting season, from market places in the morning or in the late afternoon that can be considered acceptable in a rural area. Furthermore, no industrial or mining activities are operating there. Therefore, under these conditions no sign of the air quality pollution and degradation have been observed/recorded.</p>
Climate and natural disasters	<p>Ninh Phuoc is located in a dry climatic area with low rainfall (annual average rainfall around 900-950 mm), high winds and high annual evaporation. The climate is divided into two distinct seasons, the rainy season starts in September and ends in November whereas the dry season lasts from December to August with the following basic features:</p> <ul style="list-style-type: none"> <li>+ Rainfall mainly concentrates in the three months from September to November with an average rainfall of around 750mm.</li> <li>+ Average temperature is 27.7 °Celsius; highest temperature is 35.0-</li> </ul>



**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
	<p>39.0 °C. (June); lowest temperature: 22.0 - 24.0 °C. (December);</p> <p>+ Average number of sunshine hours is 2,720 hours/year,</p> <p>+ Annual average humidity is 75%, the highest is 83% (October), the lowest is 71% (January – February)</p> <p>+ Wind regime: The prevailing wind directions are Southwest and Northeast, the average wind speed is 6.8 m/s, the strongest wind speed is 25 m/s</p> <p>Storm: On average, there has been one storm landing in the region every 4 -5 years in the past. However storms do not cause much damages as in other parts of the Central Vietnam and only heavy rainfall are causing inundation in some areas including both sides of downstream of Dinh river.</p> <p>Drought: Ninh Thuan is one of the driest provinces in the country; this is causing difficulties in agricultural production. Many irrigation systems cannot meet the produce designed capacity during dry seasons. In the winter-spring crop ( 2013-2014), a water shortage affected more than 5,400 hectares of rice in Ninh Thuan Province and most of hydropower reservoirs in the province have gone empty (ex. Ninh Thuan Province Hydropower Exploitation Company). About 200 families in Phuoc Trung Commune of Bac Ai District, Ninh Thuan Province don't have sufficient water to irrigate their fields. (<a href="http://vietnamnews.vn/society/253718/southern-farmers-face-drought">http://vietnamnews.vn/society/253718/southern-farmers-face-drought</a>)</p> <p>From January to April 2016, prolonged drought lead to salinity in some production land areas near the Dinh river. The loss of agricultural production in Ninh Thuan province from the beginning of 2016 to now has been estimated at VND 184.709 billion. Of which, about 15,000 hectares of rice had to stop production due to lack of water, 461 hectares of crops were completely damaged, estimated losses of crops was of VND 68.467 billion. About 5,291 livestock died with estimated losses of VND 11.242.billion (<a href="http://monre.gov.vn/monre_portlet/mvnplugin/mvncms">http://monre.gov.vn/monre_portlet/mvnplugin/mvncms</a>)</p>
Topography and soils	<p>The project area in An Hai commune is located in the plain and the lowland area of Ninh Phuoc district has an elevation ranging from 4m to 11m; Currently the project area is being grown with vegetables by local farmers and the rest is grown with flower due to shortage of water needed for other crops.</p> <p>According to the Land used map of Ninh Thuan Province at a scale of 1:100,000 (compiled by Central Institute of Agricultural Planning and Design, 2006), soil in the project area is ivory-white and light yellow sand dune soil with gradient from form 3 to 80 degree, soil layer thickness is more than 100 cm. The physic-chemical properties of the soil are as follows:</p> <ul style="list-style-type: none"> <li>▪ The mechanical component of soil is sand with clay content of soil samples varying from 12.5 to 16.5%; The soil is low acid to neutral since most of the pH<sub>Kcl</sub> of soil samples varies from 5.2 to 7.0.;</li> <li>▪ The soil is of poor nutrition content, because total organic matter content (OM%) ranges from 0.51 to 0.93%, total protein content (N%) ranges from 0.030 to 0.057%, total phosphorus content (P<sub>2</sub>O<sub>5</sub> %) ranges from 0.030 to 0.066% and total potassium content (K<sub>2</sub>O%) ranges from 0.136 to 0.206%;</li> <li>▪ The soil in the project area has no residue of heavy metals with arsenic (As) content of all soil sampled less than 5.10<sup>6</sup> mg/kg compared with the permissible limit of ≤12 mg/kg, Cadmium content (Cd) less than 0.005 mg/kg compared with the permissible limit of ≤2 mg/kg, Copper (Cu) content less than 0.005 mg/kg compared with</li> </ul>

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Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
	<p>the permissible limit of <math>\leq 50</math> mg/kg. Lead (Pb) content less than 0.005 to 3.91 mg/kg compared with the permissible limit of <math>\leq 70</math> mg/kg and zinc content from 20.68 to 29.87 mg/kg compared with the permissible limit of <math>\leq 200</math> mg/kg (Permissible limits of heavy metals for agricultural land are regulated by Vietnamese Standard QCVN 03-2008 / BTNMT).</p>
Surface water resource	<p>Water source for An Hai vegetation irrigation area will be extracted from Tuan Tu weir on Lu river which is main river in the subproject area</p> <p>Lu River is a tributary of Dinh River, in the project area. The river length flowing through Ninh Phuoc district is 38 km, the total catchment area is 326 km<sup>2</sup>, originating from the west of Thuan Nam district (Nhi Ha, Phuoc Ha) through Phuoc Huu, at the boundary between Phuoc Huu and Phuoc Dan town. Lu river is divided into two tributaries: one flows in the north-south direction and enters the Quao River, while the other flows through Phuoc Dan and Phuoc Hai townships and merge with Dinh River at An Hai mouth (in An Hai Commune). The Lu river is 38 km long throughout the Ninh Phuoc district and has a catchment of 326 km<sup>2</sup> catchment, with an annual average flow of 1.45 m<sup>3</sup>/s.</p> <p>The Tuan Tu weir on Lu river has a catchment area of 317 km<sup>2</sup> at the downstream of the two large reservoirs of Tan Giang (149 km<sup>2</sup>) and Bieu River (68.7 km<sup>2</sup>).</p> <p>- Quao River: A tributary of the Dinh River, which originates from the west of Thuan Nam District through Phuoc Vinh, Phuoc Thai, Phuoc Hau, Phuoc Dan and merges with Dinh river in Phuoc Thuan commune. The Quao River has a length of 40 km and a catchment area of 154 km<sup>2</sup> and an average annual flow of 1.35 m<sup>3</sup>/s.</p> <p>Surface water volume in the whole province is 2,369,000,000 m<sup>3</sup>, of which 469 million m<sup>3</sup> are in Ninh Phuoc district, accounting for 19.8% of the total surface water of the province. Beside the water flowing in the river and stream system, the district has three reservoirs (Lanh Ra, Ta Ranh and Bau Zon) which irrigate 1,200 ha.</p> <p><i>Status of existing irrigation water use of Tuan Tu weir</i>: Tuan Tu weir was built in 1993; its width is 40m and height is 1.7m; the weir is made of stone masonry and covered by reinforced concrete; In 2011, local people increased the height of the weir crest by 30cm by means of stone masonry to raise the water level and make it convenient for water delivery for upstream of Tuan Tu weir's cultivated area; The irrigation canal is 2,300 m long, concrete lined, is irrigating 70 ha of rice and 20 ha of vegetables cultivated areas in Tuan Tu village.</p> <p>Cultivated areas of Tuan Tu weir's downstream is not used surface water from Tuan Tu weir</p> <p>The project area of 300 ha at the foot of Nam Cuong sand hill belongs to 3 villages of Tuan Tu, Nam Cuong and Hoa Thanh. Being located at the tail of Southern main canal (Nha Trinh - Lam Cam irrigation system) and as an elevated sand area, there is a serious shortage of water, especially in the dry season. At present, farmers drill their own wells and install sprinkler equipment for about 160 ha of vegetable such as:</p>

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Integrated Rural Development in Central Provinces Project

DATA ITEM	SUBPROJECT DATA
	<p>Asparagus (30ha); Peanut (30 ha); scallion (20 ha); Carrots, white radish (40 ha); Tomatoes, peppers, garlic (10 ha) and a mix of other vegetables (30ha).</p> <p>Using surface water from Tuan Tu weir is calculated water balance by Design Consultant indicates water from Tuan Tu weir will be ensured irrigation water demand for both the An Hai safety vegetable subproject area and Tuan Tu weir upstream 's cultivated areas (70 ha of rice and 20 ha of vegetables).</p> <p>Technical parameters of the project is determined &amp; applied by Viet Nam Regulation QCVN04-05: 2012/BNNPTNT , for Irrigation area of 300 ha , grade of Work is IV (from SIR )</p>
Groundwater	<p>Groundwater is present in two forms: water in the quaternary loose sediments and water in cracks in earthy sediments and eruptions. The results of groundwater exploration in some areas in the province showed that:</p> <ul style="list-style-type: none"> <li>- Depth from the ground to the aquifer is 14m to 20 m.</li> <li>- Thickness of thin water aquifer is only 3 - 5 m.</li> <li>- The static water levels: 0.5 m to 3 m for the plains and larger than 3.5 m for the midland.</li> </ul> <p>The reserve of the underground water is poor and can only meet domestic uses at small scale. According to preliminary assessment of the Geological Federation No 8, the lowest monthly reserve of the province is 541,844 m<sup>3</sup>/day, in which the dynamic volume is 433,814 m<sup>3</sup>/day and static reserve: 108,030 m<sup>3</sup>/day.</p> <p>The groundwater quality is scarce of mineralized level (= 1 g/l), the An Hai coastal plain aquifer is thin and affected by salinity.</p>
Water quality National technical regulation on surface water quality	<p><i>Surface water</i></p> <p>Two samples of surface water taken from 30 m upstream and downstream of Tuan Tu weir on Lu river have been collected and have been analyzed against 8 parameters by the Center of Environmental Monitoring and Analysis of Ninh Thuan DONRE on 12 December 2016 . Results indicate that TSS content of 144, 92 mg/l (QCVN 08-MT/2015: 50 mg/l); and Coliform content 23,000; 110,000 MPN/100ml (QCVN 08-MT/2015: 7500 MPN/100 mg/l ) exceed allowed limits compared to QCVN: 08-MT: 2015/BTNMT-B1( use of irrigation supply). Result of the second sample taken in the lake of Hoa Thach village indicates that COD, BOD5 and Coliform exceed the allowed limits set by QCVN: 08-MT: 2015/BTNMT-B1 such as COD= 37.4 mg/l, BOD5 = 15.3 mg/l, Coliform = 9,300 MPN/100 ml. Thus, Lu river water to be used for safe vegetable irrigation needs to be filtered and sterilized. (See more details in Annex 3).</p> <p><i>Ground water :</i></p> <p>Water quality analysis of 12 groundwater wells in the project area done by the Agricultural Science Institute for Southern Coastal Central of Vietnam (Oct 2016) showed that 8/12 of samples have affected by salinity intrusions and their use for irrigation will affect crop and cause land degradation.</p>
Flooding	<p>Flooding is usually appearing after heavy rain and storm At the project area, there are small floods in May or June and big floods occur in October or November.</p>
Terrestrial flora and	<p><i>Terrestrial flora:</i> mainly rice, maize, vegetables such as: Asparagus, Peanut , scallion , Carrots, white radish, Tomatoes, peppers, garlic and</p>

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DATA ITEM	SUBPROJECT DATA
fauna	a mix of other vegetables. <i>Terrestrial fauna:</i> - Various wild animals live on field, including some reptile kinds (python, snake), small beasts like rats, etc.. - Domestic animals include buffalos, cows, pigs, chicken, ducks, etc. Terrestrial flora and fauna in subproject area are not listed in Vietnam's Red Data Book.
Aquatic flora and fauna	Aquatic product include shrimps in farming area: 160 ha and Post Larvae in ponds Aquatic flora and fauna in subproject area are not listed in Vietnam's Red Data Book.
Protected areas	There is no biodiversity protected zones in the subproject area.
<b>SOCIAL ECONOMIC CONDITIONS</b>	
UXO	Unexploded ordnance (UXO) is being progressed in bidding evaluation and contractor selection
Land use	The main land use in the sub-project area is for agricultural purpose. Residential concentrated areas are located along main transportation routes connecting communes as well as in commune centers; According to An Hai commune's Statistic Book : - Total land area of An Hai commune : 2,169.88 ha, of which - Agricultural land: 1,030.46 ha (occupy 47.49%); Forest land: 68.1 ha (occupy 3.14%); specialized land: 274.38 ha (occupy 12.64 %) - Rural residential land: 137.74 ha (occupy 6.35%); other land: 659.2 ha (occupy 30.88 %), most of them are exhausted sandy soil.
Nearest residential land	Residential land of Tuan Tu Village – An Hai Commune. Nearest distance is about 30 – 40 meters.
Rural infrastructure	Rural infrastructure in the Subproject area included: telecommunication system, market, medical Centre.... <i>Irrigation infrastructure</i> The investment project will help ensure pro-active irrigation of the entire agricultural land of the commune. The project will help improve the performance of existing irrigation system (Tuan Tu Dam) which has been built since the 80s of the last century. <i>National grid</i> The project will include 7 power substations which are connected to Ninh Phuoc district electricity grid. Commune roads in subproject area are concreted and connected to National Highway No1A
Agriculture and aquaculture	<u>An Hai Commune</u> Agricultural production: The total cultivated area in 2015 is 1,520.35 ha, of which: • Annual crops: 1,355 ha. Of which: Rice: 610 ha, estimated production: 4,270 tons ; Maize: Cultivation area: 19.5 ha , estimated output: 97.5 tons; Bean and vegetables: 622 ha; Livestock Grass: 103.5 ha • Perennial trees: 165.3 ha, of which: Grape: 95.9 ha, Apples: 50.4

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DATA ITEM	SUBPROJECT DATA																																																																																						
	<p>ha, Other perennial trees: 19 ha</p> <ul style="list-style-type: none"><li>Animal husbandry: Total cattle: 11,663 heads, of which buffaloes: 10 ; cows 2,182 ; goat 4,903 Sheep 2.868 heads; 1,700 pigs. Total poultry: 15,750 heads .</li><li>Aquaculture (Shrimp): farming area 160 ha out, Output: 1,800 tons. Post Larva: Production: Post Larvas are exported for 7,700 million shrimps. Of which: tiger shrimp: 616 million, white leg shrimp: 7.084 million .</li></ul> <p><u>The Project area</u></p> <p>The project area of 300 ha at the foot of Nam Cuong sand hill belongs to 3 villages of Tuan Tu, Nam Cuong and Hoa Thanh. Being located at the tail of Southern main canal (Nha Trinh - Lam Cam irrigation system) and as an elevated sand area, there is a serious shortage of water, especially in the dry season. At present, farmers drill their own wells and install sprinkler equipment for about 160 ha of vegetable such as: Asparagus (30ha); Peanut (30 ha); scallion (20 ha); Carrots, white radish (40 ha); Tomatoes, peppers, garlic (10 ha) and a mix of other vegetables (30ha). Plant structure and crop production in the project area as bellow :</p> <p><i>Cropping structure in the project area</i></p> <table><tr><th>Winter-spring crop (October- March)</th><th>Summer and summer-autumn crops (April – July)</th><th>Autumn – Winter crop (August - October)</th></tr><tr><td>Carrots, white radish, garlic, scallion, pepper, tomato</td><td>Carrots, white radish, garlic, scallion, pepper, tomato, peanut</td><td>Peanut, Carrots, white radish, scallion</td></tr><tr><td colspan="3">Asparagus</td></tr></table>	Winter-spring crop (October- March)	Summer and summer-autumn crops (April – July)	Autumn – Winter crop (August - October)	Carrots, white radish, garlic, scallion, pepper, tomato	Carrots, white radish, garlic, scallion, pepper, tomato, peanut	Peanut, Carrots, white radish, scallion	Asparagus																																																																															
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Asparagus																																																																																							
Population	<p><i>An Hai Commune</i></p> <p>An Hai commune has a population of 4,215 households in equivalent of 16,420 people; There are 7 hamlets in the commune. Kinh people make up 3,745 households out of 14,355 people, accounting for 87.42%; Cham people: 470 households or 2,065 people, accounting for 12.58%.</p> <p>Population of An Hai commune</p> <table><tr><th rowspan="2">Village</th><th rowspan="2">HH</th><th rowspan="2">Peopl e</th><th rowspan="2">Kinh peopl e</th><th colspan="2">Chăm peop e</th><th colspan="3">Poor People</th></tr><tr><th>H H</th><th>Peopl e</th><th>H H</th><th>Peopl e</th><th>Rati o</th></tr><tr><td>Long Binh 1</td><td>929</td><td>3,807</td><td>x</td><td></td><td></td><td>126</td><td>325</td><td>13,50</td></tr><tr><td>Long Binh 2</td><td>898</td><td>3,370</td><td>x</td><td></td><td></td><td>78</td><td>220</td><td>8,60</td></tr><tr><td>An Thanh 1</td><td>760</td><td>2,838</td><td>x</td><td></td><td></td><td>81</td><td>169</td><td>10,65</td></tr><tr><td>An Thanh 2</td><td>719</td><td>2,560</td><td>x</td><td></td><td></td><td>85</td><td>238</td><td>11,82</td></tr><tr><td>Hòa Thanh</td><td>301</td><td>1,252</td><td>x</td><td></td><td></td><td>30</td><td>87</td><td>9,96</td></tr><tr><td>Tuan Tu</td><td>470</td><td>2,065</td><td></td><td>470</td><td>2,065</td><td>89</td><td>312</td><td>18,93</td></tr><tr><td>Nam Cương</td><td>138</td><td>528</td><td>x</td><td></td><td></td><td>17</td><td>60</td><td>12,31</td></tr><tr><td>Total/average</td><td>4,215</td><td>16,420</td><td>x</td><td>470</td><td>2,065</td><td>506</td><td>1,428</td><td>12,00</td></tr></table> <p><i>The Project area</i></p> <p>The project area of 300 ha belongs to 3 villages: Tuan Tu, Nam Cương</p>	Village	HH	Peopl e	Kinh peopl e	Chăm peop e		Poor People			H H	Peopl e	H H	Peopl e	Rati o	Long Binh 1	929	3,807	x			126	325	13,50	Long Binh 2	898	3,370	x			78	220	8,60	An Thanh 1	760	2,838	x			81	169	10,65	An Thanh 2	719	2,560	x			85	238	11,82	Hòa Thanh	301	1,252	x			30	87	9,96	Tuan Tu	470	2,065		470	2,065	89	312	18,93	Nam Cương	138	528	x			17	60	12,31	Total/average	4,215	16,420	x	470	2,065	506	1,428	12,00
Village	HH					Peopl e	Kinh peopl e	Chăm peop e		Poor People																																																																													
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DATA ITEM	SUBPROJECT DATA
	<p>and Hòa Thạnh;</p> <ul style="list-style-type: none"> <li>Tuan Tu village: 470 households with 2,065 people, 100% are Chăm people</li> <li>Hòa Thạnh village: 301 households with 1,252 people; 100% Kinh people</li> <li>Nam Cường village: 138 households with 528 people, 100% Kinh people</li> </ul> <p>Total population of 3 villages is 3,485 people of 909 households; 470 families are Cham households making up 51.7% and 2,065 Cham people making up 59.25% of the total population. The number of poor households as of 2016 is 136 with 459 people, accounting for 26.87% of poor households in the commune and 13.69% of the total households in the three villages in the project area. ( Source: An Hai Commune 's Statistic Book 2015)</p>
Ethnic minorities	<p>There are two ethnic groups living in the subproject area: Cham and Kinh; 470 families are Cham households or 51.7% and 2,065 Cham people making up 59.25% of the total population; 439 families are Kinh households making 48.3 % and 2065 Kinh people making up 40.75 % of the total population</p>
Livelihoods	<p><i>An Hai Commune</i></p> <p>The whole commune has 7 villages with two ethnic groups (Cham and Kinh), included 4,215 households in equivalent of 16,420 people (men: 8,046 people; women: 8,374 people); . There are 1,706 agricultural households, 160 aqua-cultural households, 159 handicraft households, 1,240 commercial and service households, 154 transport households, 458 construction households (mainly brick makers) and 338 other households.</p> <p>The current average income is VND 10.7 million/person/year;</p>
Physical and cultural heritage	<p>In the subproject area, no cultural and/or natural heritage of importance.</p>
Public health	<p>The An Hai commune has a medical station. In general, the quality of medical examination and treatment, also of medical equipment and material facilities is acceptable and improving.</p> <p>In 2015, there were 4 cases of dengue fever and 10 cases of hand-foot-and-mouth disease. Extended vaccination and disease prevention were implemented, 390 people had blood tested to detect malaria parasites. During the year, the commune health station boosted propaganda on hand-foot-and-mouth disease prevention via commune radio system, advised the Commune People's Committee to set up an inter-branch inspection team in conjunction with the district inspection team to remind food processing establishments, sprayed chemicals for dengue fever treatment in Long Binh 2 village when the disease occurred</p>

## 4. ENVIRONMENTAL IMPACT SCREENING

### 4.1 Positive impacts

- In addition to produce good quality vegetables for their own consumption and for the people of Phan Rang city of Ninh Thuan province, the benefiting farmers will also trade their vegetables (high quality Asparagus in particular) to big cities like Hanoi, Ho Chi Minh City. Safe vegetables will help improving health and reduced risks of illness to all the above consumers.
- Impact of the concentrated irrigation system using surface water will result in better control of water resource. The water quality will not be polluted because of limited use of pesticides and chemical fertilizers presently utilized by farmers for groundwater to grow their vegetables, thus reducing negative impacts on health of farmers and consumers.
- The project will contribute to improve the value of the produce, increasing incomes for farmers, stabilizing living standards in the project area, especially for the ethnic minority areas and their present 13.62% households. level of poverty
- The project is located in the driest area of the country, but yet an area where Asparagus can be grown with high economic return. If the project is funded, it will significantly increase the economic efficiency of the beneficiary area.
- The project is developed based on a value added chain from production to consumption (between farmers, agricultural cooperatives, enterprises, and scientists). The success of the project will be a bright spot in the implementation of agricultural restructuring scheme in the region and serve as a pilot project for water pricing and project transfer to the management of farmers

### 4.2 Negative impacts

Besides positive impacts, the sub-project could also create some negative impact, especially, but limited to, during the construction phase, which need to be managed through appropriate mitigation measures. The negative impacts from subproject could be summarized in the following table:

**Table 3. Environmental impact screening**

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
Pre-Construction Stage Impacts					
Disturbance of UXO	No				UXO can be remained in the subproject areas where had been suffered from war. Unexploded items may create safety risk for local people and workers during construction phase  Ordnance (UXO) is being progressed in bidding evaluation and contractor selection.

# Initial Environmental Examination (IEE)

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

Integrated Rural Development in Central Provinces Project

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
Impacts on households from loss of residential or agricultural land	No				<p><b>Description:</b> Sediment tanks, pumping stations, substation, reservoirs, marketplaces, main pipelines need land acquisition:</p> <ul style="list-style-type: none"> <li>Acquired land is agricultural land and does not cause any HHs relocation. Main pipelines are installed underground and only temporary land is occupied during their installation with insignificant impact.</li> <li>Lands for the construction of pumping station headwork, intermediate tanks and level 2 pumping stations and market are agriculture land that will be permanently acquired (2.08 ha – from SIR).</li> <li>There is no household requiring relocation in the subproject.</li> </ul> <p><b>Affected object(s):</b> Households of 3 villages: Tuan Tu, Nam Cuong, Hoa Thanh of An Hai Commune whose land will be acquired.</p> <p><b>Affected level:</b> Social impacts due to land acquisitions are minor.</p> <p><b>Location:</b> agricultural land and fields of HHs along the roads, main &amp; branch pipeline, Sediment tanks, pumping stations, substation, reservoirs, marketplaces, main pipelines which are close to head works and reservoir.</p> <p><b>Time:</b> both temporary and permanent during site clearance &amp; construction</p>
Conflict of water use	No				<p>Currently, Tuan Tu weir's water only irrigation water supply for 70 ha of rice and 20 ha of vegetables of the weir upstream . Cultivated areas of the weir's downstream is not used water from Tuan Tu weir</p> <p>Using surface water from Tuan Tu weir is calculated water balance by Design Consultant for both water demand of the subproject and existing water demand of Tuan Tu weir upstream 's cultivated areas (70 ha of rice and 20 ha of vegetables). It indicates that conflict of water use will not be occurred both water use HHs of</p>



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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					upstream and downstream of Tuan Tu weir
<b>Construction Stage Impacts</b>					
Landslide, erosion or sedimentation occurring during clearing or earthworks	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Construction activities, especially excavation, filling/embankment works and storage materials in reservoir, siltation tank, pumping stations, as well as installation of main and branch pipeline could create debris or waste materials may fall in to water resources. . Landslide may be occurred at the slope of Deo Cau borrow pits and 4 disposal sites in Tu Tam, An Thanh 1 , Nam Cuong Villages in An Hai Commune. The soil erosion and landslide could cause increasing in sediments and turbidity in surface water as well as obstructing water flows. The consequence could cause negative impacts to the vegetable fields in Tuan Tu, Hoa Thanh, Nam Cuong Villages where are located near by the construction sites. The risk locations of landslide and soil erosion could be listed as bellow :</p> <ul style="list-style-type: none"> <li>- Soil erosion caused by the excavation of slopes of Tuan Tu weir and slopes along upgraded management road (95 m), foundation of pumping station, siltation tank, power substation,</li> <li>- Landslide at Deo Cau borrow pit and 3 disposal sites in An Hai Commune</li> <li>- Sedimentation caused by soil erosion and debris flow in Tuan Tu reservoir &amp; siltation tank</li> </ul> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>▪ Water sources of Tuan Tu reservoir, Lu river section where building siltation tank ( closed to Lu</li> </ul>

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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>river)</p> <ul style="list-style-type: none"> <li>Cultivation areas which located close to Deo Cau borrow pits' area.</li> <li>Crops irrigated by Tuan Tu weir</li> </ul> <p><b>Affected level:</b> This impact is minor, due to i) . volumes of excavation and embankment are not much (total excavated soil: 40,286 m<sup>3</sup>; total filling soil: 24,938 m<sup>3</sup>; balance: 15,348 m<sup>3</sup>). ii) the excavated soil will be reused to fill upgraded management road, upgraded weir, pumping stations, siltation tank, wholesale market ..., (iii) excavation activities will be mainly taken during dry season and iv) borrow pits and disposal sites are located in the vacant land. However, this impact still needs to be managed and controlled to reduce surface water pollution.</p> <p><b>Location:</b> In slope areas of upgraded head work, upgraded management road and Deo Cau borrow pit in An Hai Commune in An Hai commune</p> <p><b>Time:</b> Temporary during the construction phase.</p>
Polluted soil due to leakage of oil and other chemical substances.	Yes	Minor	Negative	Temporary	<p><b>Description:</b> The main potential polluting source of surface water could be: (i) washing construction materials (stone, sand, etc.) and machine; (ii) domestic wastewater of workers in 3 camps; (iii) grease and oil from construction machine maintenance and (iv) rainwater runoff passing through constructional areas /activities during rainy days.</p> <p><b>Affected object(s):</b></p> <p>Water surface sources in and surrounding sub-project areas such as Lu river &amp; small streams in 3 villages : Tuan Tu, Nam Cuong, Hoa Thach of An Hai commune .</p> <p><b>Affected level:</b> The impact level is minor because: i) the construction activities will be scattered in the three above villages; 3 camps will be located in difference places with small number</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>of workers mobilised on site (estimated 120 at maximum); ii) excavation will be in subsequent stages and iii) generations of domestic waste-water (less than 12 m<sup>3</sup>/day), grease and engines' oil are estimated rather limited; iv) upgrading/reinforcing Tuan Tu weir will be implemented by diverted flow method which could help to reduce sedimentation in the water. However, appropriate mitigations need to be implemented and monitored to minimized impacts.</p> <p><b>Location:</b> Water bodies in and surrounding sub-project areas such as Lu river &amp; small streams in 3 villages : Tuan Tu, Nam Cuong, Hoa Thach of An Hai commune .</p> <p><b>Time:</b> Temporary during the construction phase.</p>
Noise and vibration caused by machines & vehicles	Yes	Minor	Negative	Temporary	<p><b>Description :</b> Repairing Tuan Tu weir, construction of Siltation tanks, pumping stations, substation, Intermediate tank, wholesale market making use of machineries (concrete mixer, bulldozers, compressors, truck, etc.) will cause noise and vibrations, which may affect residential areas in Tuan Tu, Nam Cuong, Hoa Thach villages of An Hai commune as well roads utilized to transport material. In addition, the exploitation &amp; disposal of soil as well as construction waste to borrow pits and disposal site will create noise and vibrations.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Residential areas close to pumping station, intermediate tanks in the 3 above affected villages.</li> <li>Resident areas closed to Deo Cau borrow pits and 3 disposal sites in An Hai &amp; Phuoc Hai communes</li> </ul> <p><b>Affected level:</b> This impact is minor because: i) very few equipment will be mobilized on the site; ii) borrow pits and disposal site are located in vacant land and no households located close to these; iii) density of households around construction sites is low.</p>

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An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p><b>Location:</b> Residential areas near construction site, and along transportation roads &amp; borrow pits</p> <p><b>Time:</b> Temporary, during the construction phase only.</p>
Air pollution caused by machines and vehicles (dust and gas emissions)	Yes	Moderate	Negative	Temporary	<p><b>Description:</b> Dust, air pollutants will be generated from excavation activities, waste disposal activities, electrical generators, mobile concrete mixers or operation of trucks and material storage areas. However, the main air pollutants such as NOx, CO, SO<sub>2</sub>, etc. will be tolerable, since the number of construction equipment mobilized on the site will be minor and scattered in the 3 affected villages and around the borrow pits. The major air pollution will be the dust that will be released at dug surfaces (since excavation activities will be implemented during dry season) and generated by trucks and earth moving equipment which need to be appropriately managed to reduce undesirable impacts in the area.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Residential areas close to pumping station, intermediate tanks in the 3 affected villages.</li> <li>Resident areas closed to borrow pits and to the 3 disposal sites in An Hai &amp; Phuoc Hai communes</li> </ul> <p><b>Affected level:</b> This impact is considered as moderate because: i) excavation activities schedule to be implemented during dry season; ii) very few equipment will be mobilized the construction sites; iii) no household located closed to borrow pits and disposal areas; iv) very few households located around headwork of Tuan Tu weir, pumping station ... v) subproject areas are located in rural areas in which many opened space can easily dilute pollutants.</p> <p><b>Location:</b> Residential areas near</p>

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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					construction site, and along transportation roads & borrow pits Time: Temporary during the construction phase.
Solid waste and hazardous waste generation	Yes	Moderate	Negative	Temporary	<p><b>Description:</b> Solid wastes generated during construction phase include: i) domestic waste from daily life activities of workers, which is mainly rubbish and organic waste. Estimation the presence of workers to about 120, and 0.3 kg of solid waste per person per day for rural area (as in National Environmental Report 2011, for rural solid waste), the sub-project will generate 36 kg per day and approximately 19.7 tons during the whole construction period (18 months); ; ii) Construction wastes include excessive &amp; discarded soil, sand, stone, debris, steel etc, estimated to total around 15,348 m<sup>3</sup> ; these which will be transported to 03 disposal sites in An Hai and Phuoc Hai communes. The generation of solid wastes could potentially pollute soil, surface water and even cause diseases (by rubbish) for construction workers if they are not properly handled and disposed. iii) Hazardous waste: lubricating oil, chemicals mops/duster cloth, fuel and chemical's containers are generated by maintenance activities or by hazardous material. If not properly managed this waste could pollute water and soil.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Air quality in and around the 3 worker camps &amp; the 3 disposal sites.</li> <li>Water quality of surface water bodies nearby worker camps as well as local vegetable fields nearby construction sites.</li> <li>Workers living in the 3 camps.</li> <li>Roads users on the transport route of subproject.</li> </ul> <p><b>Affected level:</b> This impact should be moderate due to: i) waste will be generated for the whole construction phase; ii) worker will be living in three</p>

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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>camps (only 120 people in total); ii) locations of disposal areas are far from residential areas; iii) demand of hazardous material used on the site will also be very limited.</p> <p><b>Location:</b> All sub-project construction sites, borrow pits, 3 disposal sites and 3 camp sites in An Hai commune.</p> <p><b>Time:</b> Temporary during construction phase</p>
Soil pollution	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Soil quality in the subproject area could be affected by domestic wastewater from 3 worker camps; (ii) grease drops from construction machinery maintenance and (iii) domestic and construction wastes. If those wastes are not collected and treated in proper manners, these can contaminate the soil. Moreover, soil can also be negatively affected by scattering materials and dropped parts of concrete from construction site. The excavation and embankment of soil could also have impact on cover layers of soil in borrow pits, disposal sites, management road; If those wastes are not collected and treated in proper manners, they could contaminate soil, especially wastewater containing highly contaminating chemicals, grease and oil as well as other hazardous substances.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Soil quality of cultivated land along upgraded/reinforced works,</li> <li>Borrow pits, 3 disposal sites in construction sites &amp; in 3 worker camps.</li> <li>Local people in the beneficiary areas of the three villages : Tuan Tu, Nam Cuong, Hoa Thach of An Hai commune</li> </ul> <p><b>Affected level:</b> This impact is minor because: i) the total number of workers is limited to 120, scattered in 3 worker camps; the amount of wastewater generated is estimated at</p>

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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>approximately 12 m3 per day; ii) the hazardous substance usage and waste are insignificant since the demand of these substance is quite low. However, these still need to be managed appropriately as requested in the waste management section.</p> <p><b>Location:</b> The construction areas and 3 worker camps, 3 disposal sites and a borrow pit in An Hai commune.</p> <p><b>Time:</b> Temporary during the construction phase.</p>
Local flooding	Yes	Minor	Negative	Temporary /Permanent	<p><b>Description:</b></p> <p>Constructing siltation tanks, pumping stations, substation and Intermediate tanks may block local water flows in rainy seasons and generate temporary local flooding/inundation. It may occur that contractors will not fully follow the design and/or technical specifications, possibly leading to clogging existing culverts. The discarded construction material and other wastes dropped into small streams in the subproject area can also block the water flow. Should this happen for extended period it may cause damage to crops and access roads in the surrounding areas</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Crops/vegetables &amp; access roads of local people in sub-project area.</li> <li>Local people in beneficiary areas of the three affected villages.</li> </ul> <p><b>Affected level:</b> This impact is minor because: i) flow diverted method will be applied to ensure free water flow in the existing canals during the construction phase; ii) excavation activities will be planned to be implement during the dry period; iii) intervention will be conducted section by section and, iv) very small adjustment will take place in the existing drainage system and their functioning will be granted during construction phase; v) finally, design of upgrading irrigation canal systems will contribute in improving the drainage function of the existing facilities.</p>

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	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p><b>Location:</b> In and around headwork items areas, intermediate tanks, upgraded management road and other areas closed to sub-project in An Hai commune.</p> <p><b>Time:</b> Temporary during the construction phase, though it can become permanent in case of errors in the design stage</p>
Unsafe for travelling and business during installing pipeline along the road (Traffic safety)	Yes	Moderate	Negative	Temporary	<p><b>Description:</b> Installing 9,643 m of main and branch pipeline from pump station level 1 to intermediate tanks, of which some pipeline sections run along commune &amp; village road (in Tuan Tu village) may cause encroachment of existing road surface. Operation of equipment, storage of material may cause disturbance for local travel and unsafe condition for local people. The unsafety condition could be listed as: (i) Potential traffic accidents, especially involving elderly persons, children and cattle, and, (ii) difficulties of movement of goods through the upgraded roads to install the pipeline</p> <p>In addition, it is observed that the transport routes from construction sites to borrow pits and disposal areas is very narrow and of low grade; thus, operation of trucks on the rural roads could potentially cause impact to local traffic safety in An Hai commune</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Local people in the sub-project area and people traveling through upgraded road and Tuan Tu road ( where main pipeline to be installed) during construction phase.</li> </ul> <p><b>Affected level:</b> This impact is moderate: Indeed, i) upgrading of road and installing main pipelines will involve occupying exiting road surface which may cause temporary block of access routes; ii) routes from construction sites to borrow pits and disposal areas is very narrow and of low quality; iii) the main pipe line installing method is done by completing section by section, with warning signs</p>



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					<p>and schedule to inform local residents of the planned activities; iv) the traffic density on those roads are minor. However, adequate traffic management needs to be implemented to ensure adequate traffic movement and safety for local people.</p> <p><b>Location:</b> Along the constructed road, Tuan Tu road and transportation routes of sub-project activities in An Hai Commune.</p> <p><b>Time:</b> Temporary during the construction phase.</p>
Impacts on ecology	Yes	Minor	Negative	Temporary	<p><b>Description:</b> The sub-project does not include natural reserves, national parks and ecology areas with high value in terms of science and reservation, which need to be protected. Therefore, it does not significantly affect the local ecology. The areas of the 1 borrow pits and 3 disposal site along sub-project areas are vacant lands in which only small shrubs of no commercial or scientific value are growing. Therefore, the exploitation of soil from such borrow pits will not have any noticeable negative impact on those lands or on the nearby plantations.</p> <p>The construction activities of sub-project could affect on aqua-ecology in Tuan Tu weir &amp; Lu river; however, according to technical assessments, species in such weir &amp; river are insignificant.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Vegetation covering the construction affected areas along installed main &amp; branch pipelines, upgraded road as well as 1 borrow pits &amp; 3 disposal sites.</li> <li>Aquatic flora &amp; fauna in Tuan Tu weir &amp; Lu river</li> </ul> <p><b>Affected level:</b> This impact is minor: according to two site surveys, areas around head work, pumping stations, siltation tanks, upgraded road, installed pipeline areas in An Hai commune are covered with non-valuable grass/shrubs. Only agricultural areas</p>

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					<p>are growing vegetables, such as Asparagus and various other farm products will be occupied. Aquatic species living in Tuan Tu weir and Lu river &amp; small streams in the subproject are of little economic value and in any case will not be significantly affected. Furthermore, the impact will only last a short time and the whole ecological environment of the affected area will recover to its original conditions pretty soon after works completion</p> <p><b>Location:</b> Along the upgraded road, and upgraded/constructed canals, 01 borrow pits &amp; 03 disposal sites in An Hai &amp; Phuoc Hai communes</p> <p><b>Time:</b> Temporary during site clearance &amp; construction.</p>
Deteriorate/ damage on local infrastructures	Yes	Minor	Negative	Temporary	<p><b>Description:</b> According to the field survey &amp; discussion with local authorities, the existing communal roads' surfaces, are concreted or graveled (such as Communal road connecting communes in sub-project). Earth roads connecting villages &amp; commune are deteriorated, damaged and difficult for travel. The roads are narrow (4 - 6 m and the traffic load limit is less than 5 - 6 tons. So, unless the weight of loaded vehicles transporting material to and from work-sites are scrupulously checked and appropriately limited to specifications, these roads and bridges may be further damaged.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Roads utilized for sub-project construction: Roads with installed pipeline in Tuan Tu, Nam Cuong, Hoa Thanh village and transportation routes of sub-project activities in An Hai Commune .</li> <li>Local people in the sub-project area in Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune .</li> </ul> <p><b>Affected level:</b> This impact is minor due to the limited extent of transportation needed for sub-project construction are small and scattered in 3 villages : Tuan Tu, Nam Cuong, Hoa</p>

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					<p>Thanh of An Hai commune . In addition, there is no domestic water supply system and/or neither drainage pipe are seen in the subproject area, therefore these impacts will be minor. Moreover, construction contractor need to well prepare construction and transportation plan to minimize possible negative impacts; the contractor should also be bound to repair damaged infrastructure to their original condition if this situation will occur.</p> <p><b>Location:</b> All roads/sluiques or bridges around the sub-project area in An Hai and Phuoc Hai commune</p> <p><b>Time:</b> Temporary during estimated construction period.</p>
Social disturbance by worker gathering	Yes	Minor	Positive & Negative	Temporary	<p><b>Description:</b>  <i>Negative impacts</i> include: i) diseases such as sore eyes, cholera, flu and other respiratory diseases affecting workers and spread to local people in the subproject area; ii) social problems can appear such as gambling, drug addiction, prostitution, violence, conflict amongst workers, or among workers and local people. There is also a risk of sexually transmitted diseases (STD) from 120 workers, including HIV/AIDS that needs to be considered.  <i>Positive impacts:</i> an increase of labor force in commune could temporarily induce some positive economic support for local trading market.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Workers on the sites &amp; in 3 camps.</li> <li>People in Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune .</li> <li>Business in An Hai commune .</li> </ul> <p><b>Affected level:</b> Both positive and negative impacts are minor because: i) the workers will be split in 3 camps; ii) local workers will be encouraged to live on site; iii) construction schedule is merely 18 months and iv) finally, workers need to be well managed and disciplined to eliminate negative</p>

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					<p>impacts.</p> <p><b>Location:</b> In 3 worker camps and social secure in Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune</p> <p><b>Time:</b> Temporary during estimated construction period.</p>
Impacts on health of local people and construction workers	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Dust and noise generated from construction activities, and sanitation living condition will be main factors directly affecting health of workers and local community, especially in case of safety regulations not being properly complied with. These may include eye affection, skin diseases and heart related diseases, etc.</p> <p>The exploitation &amp; transportation of soil in Deo Cau 's borrow pits in Nhon Son Commune of Ninh Phuoc District will cause dust as well as pollute air which can have a negative effect on health of locals and workers in the whole work-sites and surrounding areas.</p> <p>The high risks of health problem and safety for workers may also come from unsafe living conditions, unsafe food and water supply and inappropriate personal protection equipment and conflict between workers and road vehicles, ,traffic accidents involving people passing through construction places</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>- Workers in the construction sites;</li> <li>- Residential areas along the roads used for transport of materials and near the works construction area;</li> </ul> <p><b>Affected level:</b> This impact is at minor level due to limited number of workers mobilized to each construction sites (headwork, pumping stations , new power-substations, water tanks, main &amp; branch pipeline ...). The traffic density along constructed roads is low. In addition, construction activities do not require very complicated skills and workers are required to follow</p>

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					<p>environment and labour safety measures to reduce to a minimum the probability of accidents However, because of the significant of human health and lives, including workers and local residents, it is required to strictly follow legal requirements for construction safety and environment;</p> <p><b>Location:</b> Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune as well as other communes a long transportation routes of materials; 3 camps of sub-project;</p> <p><b>Time:</b> Temporary during construction period;</p>
Impacts around the mines of soil, stone and sand	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Subproject will exploit embankment soil from Deo Cau borrow pits in Nhon Son Commune – Ninh Phuoc District, where the availability of embankment soils for construction sites is ensured. This area is a vacant land and approved by Nhon Son CPC. However, during the clearance and excavation period, the HHs close to these mines could be disturbed by transportation activities, dust as well as redundant soil on the roads.</p> <p>Other materials: stone &amp; sand will be purchased through a along the Dinh river in Nhon Son Commune-Ninh Phuoc District. Cement, steel, brick and other material will be bought in from Phan Rang City</p> <p>The mining of excavation soil will generate dust &amp; air pollutants during mining, transportation, and landslides during mining. Transportation of materials (including soil &amp; construction materials) will potential generate air pollution impacts and impact on local infrastructures as well as disruption of traffic attention.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Local residents along transportation routes.</li> <li>Workers of sub-project working in &amp; people living, working nearby Deo</li> </ul>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>Cau borrow pits.</p> <p><b>Affected level:</b> The impact is minor: i) the borrow pits are located in vacant areas and there are no households close to these areas; ii) total demand of embankment soil will be very minor ( 24,938 m<sup>3</sup> of soil for the whole project); and iii) other materials will be purchased from licensed and controlled mines by local authorities.</p> <p><b>Location:</b> Deo Cau borrow pits and areas along transportation roads in Ninh Phuoc &amp; Ninh Son District.</p> <p><b>Time:</b> Temporary during estimated construction period.</p>
Affect existing irrigation systems	No				<p>The subproject will not affect the existing irrigation system of cultivated land areas of both upstream and downstream of Tuan Tu weir</p> <p><u>For cultivated land areas in upstream of weir Tuan Tu weir :</u></p> <p><i>Status of existing irrigation water use:</i> Tuan Tu weir was built in 1993; its width is 40m and height is 1.7m; the weir is made of stone masonry and covered by reinforced concrete; In 2011, local people increased the height of the weir crest by 30cm by means of stone masonry to raise the water level and make it convenient for water delivery; The irrigation canal is 2,300 m long, concrete lined, is irrigating 70 ha of rice and 20 ha of vegetables cultivated areas upstream of Tuan Tu weir in Tuan Tu village.</p> <p><i>Affecting irrigation patterns by the subproject</i> The upgrading of the spillway does not affect water flow at the Tuan Tu weir; the construction of reservoir, pumping stations and substations are on existing ground so are not affecting Lu river water flow . Thus, cultivated land area upstream of weir will not be affected by irrigation water used from Tuan Tu weir during construction time</p> <p><u>Cultivated land areas in downstream of</u></p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p><u>Tuan Tu weir (the subproject area)</u></p> <p><i>Status of existing irrigation water using pattern:</i></p> <p>The project area of 300 ha at the foot of Nam Cuong sand hill belongs to 3 villages of Tuan Tu, Nam Cuong and Hoa Thanh. Being located at the tail of Southern main canal (Nha Trinh - Lam Cam irrigation system). Being an elevated sandy area it is affected by a serious shortage of water during the dry season. At present, farmers drill their own wells and install sprinkler equipment for about 160 ha of vegetable including: Asparagus (30ha); Peanut (30 ha); scallion (20 ha); Carrots, white radish (40 ha); Tomatoes, peppers, garlic (10 ha) and a mix of other vegetables (30ha).</p> <p><i>Affecting irrigation pattern by the SP:</i></p> <p>Task of the subproject is constructing a technical infrastructure to ensure proactive irrigation for 300 ha of safe vegetables in An Hai commune from Lu river water source. Thus , cultivated land area downstream of weir Tuan Tu will not be affected by the subproject during construction time</p>
Cultural objects or graves found	No	Minor if such objects/ graves have been found		Temporary	<p><b>Description:</b> Currently there are no cultural objects or graves found in sub-project areas. Therefore, the construction will not have any impact on any object of the kind; Should any cultural objects and/or graves found during excavation work, the contractor is compelled to immediately suspend works in that area and notify the State Agency responsible for culture, sports and tourism for prompt action/measures.</p> <p><b>Affected object(s):</b></p> <p>Potential cultural objects/graves within construction areas(reservoirs, borrow</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>pits, disposal sites, upgraded roads and canals)</p> <p><b>Affected level:</b> Currently there is no impact, but if there is any occurrence, it is estimated of only minor level;</p> <p><b>Location:</b> Construction areas, Deo Cau borrow pits, 03 disposal sites in Phuoc Hai and An Hai communes;</p> <p>Time: Temporary during construction period;</p>
Environmental recovery activities	Yes	Minor	Negative & Positive	Temporary and Permanent	<p><b>Description:</b> The construction contractor needs to restore damaged environment as well as local infrastructures to its original condition. If environmental recovery activities will not be properly implemented, natural environment of the subproject area may suffer from: (i) loss of trees along upgrading management road &amp; installed pipeline roads, and Deo Cau borrow pits; (ii) changing environmental landscape Deo Cau borrow pits and 3 disposal areas; and (iii) downgrade of existing public infrastructures. Moreover, restoring the original environmental conditions of damaged features may also have some positive impacts. These may include strengthening road surface, which could result in their longer use and become better in terms of safety for local people as well as increasing green space in recovered areas.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>Local infrastructures used by the sub-project in An Hai commune</li> <li>Local people in the sub-project area &amp; people traveling through the roads need to be restored.</li> <li>Landscape of Deo Cau borrow pits &amp; construction areas.</li> </ul> <p><b>Affected level:</b> The construction contractor needs to restore damaged environment to its original status as well as that of existing structures</p>



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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>damaged during construction activities. These may cause:</p> <p>(1) Negative impacts such as damaging road surface, unplanned cuttings of trees belonging to locals that need to be compensated. Those activities could also emit polluting gases from construction machines and transportation vehicles, as well as generate solid waste, hazardous waste and wastewater. However, it is estimated that these occurrences will be minimal.</p> <p>(2) Moreover, restoring the original environment conditions of the damaged features may also have some positive impacts. These may include strengthening roads surfaces, which could result in their lengthier use and become better in terms of safety for local people as well as increasing green space in areas restored to their original condition.</p> <p><b>Location:</b> installed main &amp; branch pipeline road /places; constructed pumping stations; and upgraded management road in Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune.</p> <p><b>Time:</b> Temporary during estimated construction period</p>
<b>Impacts in operation stage</b>					
Water pipelines, drains & tanks obstructed or inundated because of not cleaning dredging on time	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Tanks, drains and pipelines are likely to be obstructed by flowing surface water that sweeps rubbish, sand due to untimely dredging/cleaning . This will cause water logging and temporary inundation in several low-lying places;</p> <p><b>Affected object(s):</b> Productive fields along works and local inhabitants;</p> <p><b>Affected level:</b> This impact is minor due to maintenance activities include tanks, pipeline, drains dredging/ cleaning that will be implemented by The Exploitation of Irrigation Works Company Ninh Thuan , branch of Ninh Phuoc and Investment Enterprise ;</p> <p><b>Location:</b> Along drains, tanks and</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					pipelines of Tuan Tu, Nam Cuong, Hoa Thanh village –An Hai Commune ; <b>Time:</b> During the operational phase;
Erosion or landslide	Yes	Minor	Negative	Temporary	<p><b>Description:</b> Rainwater can cause landslide and erosion, deposit sediment into reservoir of Tuan Tu weir , drains, especially during heavy rain days. These occurrences could pollute water sources, aqua-species as well as affect local people.</p> <p><b>Affected object(s):</b></p> <ul style="list-style-type: none"> <li>- Local peoples in the sub-project area;</li> <li>- Water quality and aqua-species in reservoir;</li> </ul> <p>Affected level: This impact is minor and stabilized soon after when vegetation fully grown on downstream Tuan Tu slopes</p> <p><b>Location:</b> downstream dam's slopes of Tuan Tu weir</p> <p><b>Time:</b> During the operational phase, with less impact after soil is compacted and vegetation grows.</p>
Water quality could be pollution due to increase of fertilizer or pesticide volume	Yes	Minor	Negative	Permanent	<p><b>Description:</b> The increasing irrigation capacity from surface water of Lu river will boost production. However, the use of fertilizer and/or pesticide will also normally increase and this will have an effect on both surface and ground water in sub-project area as well as in the water of downstream irrigated fields.</p> <p><b>Affected object(s):</b> water bodies close to the cultivated area irrigated by the subproject and water of downstream of Lu river</p> <p><b>Affected level:</b> The impact is minor</p>

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IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE
	YES / NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE ?	IS IT TEMPORARY OR PERMANENT?	
					<p>because an increase of fertilizers and pesticides is relatively low; moreover, it is also expected that the increasing trend of using environmental-friendly products will prevail in the coming future.</p> <p><b><u>Location:</u></b></p> <p>Beneficiary areas of Tuan Tu, Nam Cuong &amp; Hoa Thanh Villages of An Hai commune and downstream of Lu river</p> <p><b><u>Time:</u></b> Long term in operational phase.</p>

## 5. ENVIRONMENTAL MANAGEMENT PLAN

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

### 5.1 Environmental impacts and mitigation measures

**Table 4. Environmental mitigation plan**

Impacts		Mitigation Measures				
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
<b>Pre-construction phase</b>						
Impacts on households from loss of residential or agricultural land	Minimize social impacts to HHs along the sub-project sites	<ul style="list-style-type: none"><li>- Apply appropriate process for AHs agreed to donate their land for the sub-project in public consultation held by PPMU of Ninh Thuan ;</li><li>- Policies and guidelines for land and asset acquisition and compensation need to be set up;</li><li>- The detail survey need to be conducted to identify the number of HHs as well as assets on acquired temporary and permanent land for compensation and to support affected households by reducing economic burdens ;</li><li>- Ninh Thuan PPMU has to conduct public consultation to inform potential impact of land acquisition to local people;</li></ul>	The Ninh Phuoc No Clearance & Compensation Board and Ninh Thuan PPMU	Lands of the HHs in areas of upgraded head work, pumping stations, siltation tank, power-substations in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;	Before construction activities	Cost of sub-project's preparation by Ninh Thuan PPMU/Ninh Thuan PPC
Conflict of water use and CC impact??	No conflict of water use	<i>Water use from Tuan Tu weir</i> Using surface water from Tuan Tu weir is calculated water balance by Design Consultant indicates water				

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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
		<p>from Tuan Tu weir will be ensured irrigation water demand for both the An Hai safety vegetable subproject area and Tuan Tu weir upstream 's cultivated areas (70 ha of rice and 20 ha of vegetables).</p> <ul style="list-style-type: none"> <li>- Technical parameters of the project is determined &amp; applied by Viet Nam Regulation QCVN04-05: 2012/BNNPTNT , for Irrigation area of 300 ha , grade of Work is IV (from SIR )</li> <li>- <i>Effect of climate change</i></li> <li>- The design of the SP should carefully take into account parameter on low flow to the project area corresponding to P = 85% in dry season ( from December to August of next year) that issue of the effects of the dry season rainfall for the subproject produce.</li> <li>-</li> </ul>				
<b>Construction phase</b>						
Erosion or sedimentation caused by during clearing or earthworks	Minimize soil erosion and increased sedimentation in flow caused by erosion	<ul style="list-style-type: none"> <li>- Excavation works will be scheduled to exclude rainy season (from September to the end of November ) as much as possible;</li> <li>- Split installing main and branch pilines section by section to reduce the concentration of materials and extent of excavation and embankment;</li> </ul>	Contractors	In slope areas of upgraded reservoir, spillways, and siltation tank , 15 water tanks of Tuan Tu, Nam Cuong, Hoa	During the construction phase	Included in the construction contract

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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
		<ul style="list-style-type: none"> <li>- Material storage areas need to be bounded and covered during rainy times;</li> <li>- Stabilize all slopes, embankments, and other erosion-prone working areas while works are proceeding at borrow pit and disposal areas ;</li> <li>- Re-plant vegetation covering upper parts of slope sections of management road and of tuan Tu weir slopes as soon as feasible after excavation and embankment works are achieved;</li> <li>- The exploitation of borrow pits needs to avoid rainy days that may cause land sliding</li> <li>- Not allow any heavy machinery or other equipment to be located on the top of digging areas to avoid possible landslides;</li> </ul>		Thanh Villages – An Hai Commune ;		
Polluted soil due to leakage of oil and other chemical substances	Minimize pollutants discharging into surface water source	<ul style="list-style-type: none"> <li>- Discarded lubricant and other chemicals have to be kept in dry covered area;</li> <li>- Discarded lubricants and chemicals from construction sites need to be collected, transported and treated according to the Circular No. 36/2015-BTNMT of MONRE;</li> <li>- Construction waste needs to be transported by adequate means to agreed disposal area in 03 agreed disposal sites of An Hai and Phuoc Hai</li> </ul>	Contractors	Tuan Tu reservoir, Lu river, existing canal (in upstream of Tuan Tu weir) and other water surface sources	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		<p>communes;</p> <ul style="list-style-type: none"> <li>- Provide dustbins at work sites to manage wastewater and domestic waste from workers at 03 camp sites;</li> <li>- Disposal of solid wastes into reservoir, Lu river, other water sources, agricultural fields shall be prohibited through notices in signboards at sites and be enforced by daily patrols by contractors' personnel in all sites;</li> <li>- Contractors must prepare a place to clean/wash tools/vehicles. Washing trucks/ vehicles next to the water bodies, existing rivers, streams, canals and reservoirs such as Tuan Tu weir's reservoir, Lu river will not be permitted;</li> <li>- Locations of 03 worker camps need to be apart from Tuan Tu reservoir, Lu river as well as existing canal (in upstream of Tuan Tu weir) to avoid water contaminations from domestic waste;</li> <li>- Covering material storage areas when raining is needed. Temporary storage of constructional and domestic waste on the sites not last more than 24 hours.</li> </ul>				
Noise and vibration caused by machines & vehicles	Ensure noise/vibration according to standard QCVN 26 & 27:2010/BTNMT	- Construction vehicles, machines and equipment need to meet standards related to noise and vibration as regulated by the Government. The Contractor needs to submit the official	CPMU, LIC, Ninh Thuan PPMU, contractors	Residential areas in constructed works and transportation routes of An Hai and Phuoc Hai	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		<p>documentation proving that all construction vehicles, equipment, and machines are checked and meet requirements concerning noise and vibration generated of the current Vietnam standards;</p> <ul style="list-style-type: none"> <li>- Ensure all construction vehicles and equipment are well maintained. Turn off machines and/or equipment (when possible) to avoid accumulated noise and vibration impacts on workers;</li> <li>- All noise and vibration generating activities shall be avoided during resting time of local people (12-13h and 20h to 6h) at Tuan Tu reservoir, pumping stations , along the installed pipelines and other works;</li> <li>- Provide ears' protective equipment for workers working in high noise conditions generated by machinery and/or equipment, and allow for reasonable time-off from work when they are exposed to excessively long periods to noise and vibrations, as regulated in Decision 3733/2002 of Ministry of Heath</li> <li>- Detailed construction schedule needs to be publicly announced to local people so that activities can be scheduled to reduce noise and vibration.</li> </ul>		communes		



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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
Air pollution caused by machines and vehicles (dust and gas emissions)	Ensures air pollution complies with QCVN:05-2013/BTNMT	<ul style="list-style-type: none"> <li>- Covering trucks and transportation vehicles to minimize dust generated when transporting materials and wastes;</li> <li>- The use of construction materials need to be properly planned to limit as much as possible the volume of quantities stored on the sites;</li> <li>- Watering practices to minimize dust generation need to be implemented for roads and working sites that are close to residential areas, such as Tuan Tu , Nam Cuong, Hoa Thanh Villages in An Hai Commune</li> <li>- Equipment/vehicles have to be verified and licensed. In addition, it is mandatory to have regular maintenance to ensure that emitted gases are under the established thresholds;</li> <li>- Equipment and machines will not be allowed to move outside of construction sites to ensure control of emission sources;</li> <li>- All material/waste storages shall be located away from any households and sensitive areas.</li> </ul>	CPMU, LIC, Ninh Thuan PPMU, contractors	Residential areas in communes along constructed works and transportation routes, disposal sites and borrow pits including An Hai and Phuoc Hai communes	During the construction phase	Included in the construction contract
Solid waste and hazardous waste generation	Minimize impacts to environment by solid wastes & hazardous waste	<ul style="list-style-type: none"> <li>- Generated solid waste has to be regularly removed to the 03 disposal sites agreed with local people of An Phuoc (1 site), An Hai (2 sites) communes;</li> </ul>	Contractors	All sub-project construction sites, 3 disposal sites and 3 camp sites in Tuan Tu, Nam Cuong, Hoa	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		<ul style="list-style-type: none"> <li>- In case that local people ask excavated soil for their house, the agreement between local households, contractors and local authorities need to be obtained.</li> <li>- The transportation of discarded soil to disposal areas will be managed and implemented following mitigation measures in transportation to reduce air pollution. Trucks will be covered during transporting and be regularly cleaned out of dust;</li> <li>- Equip 08 dustbins to work sites (it is proposed that there will be 02 dustbins tanks provided at each construction site);</li> <li>- Sign a contract to weekly collect solid waste at 04 workers' camps with a local waste collection agency;</li> <li>- Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited;</li> <li>- Burning of construction and domestic wastes shall be prohibited.</li> </ul>		Thanh Villages – An Hai Commune ;		
Soil contamination	Minimize soil contamination	<ul style="list-style-type: none"> <li>- Covering material storage areas and handling chemicals and wastes to ensure that construction materials and/or wastes could not fall into agricultural land such as Asparagus &amp; vegetables fields in the subproject areas;</li> </ul>	CPMU, LIC, Ninh Thuan PPMU, contractors	03 workers' camps, embankment sites in Tuan Tu reservoir, installed pipeline roads , Deo Cau	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		<ul style="list-style-type: none"> <li>- Discarded lubricant, chemicals must be kept in dry and covered area</li> <li>- Toxic/hazardous waste, if any, need to be collected, transported and treated according to Circular No. 36.2015/BTNMT of MONRE;</li> <li>- Regularly collect solid wastes and transport them to disposal area where had agreed with local authorities/local people of An Hai and Phuoc Hai communes;</li> <li>- Provide dustbins and mobile septic tanks in all construction sites and 03 worker camps;</li> <li>- Wastewater from 03 worker camps needs to be collected and treated by septic tanks before being discarded.</li> </ul>		borrow pit; 3 disposal sites and other works in An Hai and An Phuoc communes;		
Local flooding	Ensure that the construction does not interrupt farming activities	<ul style="list-style-type: none"> <li>- Setting up appropriate construction schedule to avoid rainy season, especially for excavation activities.</li> <li>- Manage storage of materials and/or wastes to avoid them falling into water flowing in existing irrigation canals in upstream of Tuan Tu weir blocking intakes and/or culverts</li> <li>- Regularly checking water flow situation of canals, culverts and removing materials that block water flow;</li> <li>- Placing for washing vehicles and tools next to the rivers, streams and existing</li> </ul>	Contractors	In residential areas in downstream of Tuan Tu reservoir, Lu river , existing canal in upstream of Tuan Tu weir of An Hai Commune ;	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		canals will not be allowed such as in Tuan Tu reservoir, along Lu river ;				
Unsafe for travelling and business during installing pipeline along the road (Traffic safety)	Ensure traffic safety and minimize life disturbance of local people	<ul style="list-style-type: none"> <li>- Install traffic signals at construction sites to regulate and minimize speed of vehicles or warning panels of areas under construction, especially at the roads' intersections;</li> <li>- Install lamps at night at construction sites;</li> <li>- Inform the community about construction schedule through informal public consultation or at any local people meetings and display related information on notice boards of An Hai communes;</li> <li>- Construction activities need to be done section by section to minimize temporary acquired areas on install pipeline roads as well as to preserve road function during construction period;</li> <li>- Training for drivers of sub-project as well as workers to work respecting safety rules and warning people passing nearby;</li> <li>- Assign at least 01 worker who will monitor, during peak hours, the inflow and outflow of vehicles to and from construction sites as well as warning people to ensure traffic safety;</li> </ul>	Contractors	Along installed pipeline roads and on weir crests especially for communities using these facilities in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;	During the construction phase	Included in the construction contract

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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
Impact on ecology	Minimize impacts on local ecology	<ul style="list-style-type: none"> <li>- Only cut down private trees and agricultural plants that have been taken into account in compensation plans;</li> <li>- Any cut plants and/or damaged fields which are out of the ROW will be compensated according to voluntary agreement;</li> <li>- Re-plant vegetable cover section by section after construction work completed to return landscape to its original condition;</li> </ul>	Contractors	Areas surrounded the upgraded head work, pumping stations, siltation tank, power-substations in Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune	During the construction phase	Included in the construction contract
Deteriorate/ damage on local infrastructures	Minimize adverse impacts to existing infrastructures	<ul style="list-style-type: none"> <li>- Work with existing infrastructure owners (electricity, water...) to identify locations of underground components if any; obtain the agreement of local authorities in using transport routes.</li> <li>- Any public facilities damaged during project activities need to be fully repaired and recovered to their original conditions by the contractor; Load capacity of trucks should not exceed local bridges /roads' load design (weight of loaded truck should be lower than the design load of 5 or 10 tons) depending on the designed load of the bridge /road);</li> <li>- After construction completion, all public facilities must be re-checked to ensure their functions have not been affected by sub-project activities, if any damage has been identified besides normal wear and tear, the contractor will be responsible for repairing the</li> </ul>	Contractors	All roads' components used by the sub-project area & transportation routes in An Hai and An Phuoc Commune;	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		damaged structures to their original conditions and compensating for damages that cannot be recovered.				
Social disturbance by worker gathering	Minimize disturbances to local people's life due to workers	<ul style="list-style-type: none"> <li>- Recruitment of workers should prioritize local workers;</li> <li>- Register provisional residence for workers temporary living in the 03 camps;</li> <li>- Contractor needs to regulate camp sanitation system;</li> <li>- Carry out HIV/AIDS and sex transmission infection prevention program;</li> <li>- Propagate and raise awareness of the construction workers to maintain discipline, habits and customs and create good relationships with local people and reduce social evils;</li> <li>- Contractors need to be encouraged to organize provision of meals for all workers at each site to ensure hygiene and food safety;</li> <li>- Spray insecticides in the 03 workers' camps;</li> <li>- Train and guide labor safety measures and prevention of common diseases for workers.</li> </ul>	Contractors	Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune	During the construction phase	Included in the construction contract

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
Impacts on health of local people and construction workers	To ensure good health and safety to local people and workers	<ul style="list-style-type: none"> <li>- Construction contractor needs to register number of labor working for sub-project to local authority;</li> <li>- Regularly testing health of workers against infectious diseases as regulated by Ministry of Labor;</li> <li>- Provide sufficient labor safety equipment to workers such as safety shoes, helmets, harness etc. Instruct workers how to use them continuously to ensure compliance with safety rules;</li> <li>- A first aid kit will be provided at each construction site to ensure that patients can receive first aid timely before transporting them to the medical station/ hospital;</li> <li>- Collaborate with commune clinic center to receive additional support;</li> <li>- Install power network at site in accordance with official safety regulations and ensure that the power lines are safe and that the power connections to grid or generators are located at dry and safe places;</li> <li>- Install warning signs at the electric receptacles;</li> <li>- Display information panels on the labor regulations at site;</li> <li>- Install fences, warning signs at the intersection between canals and roads;</li> </ul>	Construction contractor	Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune as well as other communes along transportation routes of materials and 03 camps of sub-project;	During construction phase	Included in the construction contract

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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
		<ul style="list-style-type: none"> <li>- Construct temporary drainage ditches to drain water from sites, prevent any possible water logging</li> <li>- Preparing emergency responses (alerts and remedy intervention) for any occurrence during construction such as fire, flooding or other unforeseen events.</li> </ul>				
Impacts concerning quarries for soil, stone and sand extraction	Minimize environmental impacts caused by mining raw materials for construction	<ul style="list-style-type: none"> <li>- The soil will be exploited from only Deo Cau borrow pit in Nhon Son Commune –Ninh Son District , which are to the construction about 12-15 km</li> <li>- During soil excavation, mitigation measures to environment needs to be implemented:               <ul style="list-style-type: none"> <li>+ Exploit section by section to avoid excessive dust generation and landslides and prepare recovery plan for exploited areas.</li> <li>+ Workers in quarries have to have PPEs and should follow proper safety guidelines. Vehicles need to be covered to avoid dust &amp; solid waste dropping on the roads.</li> <li>+ Night-time transportation need to be minimized to avoid traffic accidents possibly due to poor night-time visibility;</li> </ul> </li> </ul>	<p>Mines' owners (stone &amp; sand quarries );</p> <p>Nhon Son CPC</p> <p>Construction contractor</p>	Areas of Deo Cau borrow pits are in Nhon Son Commune-Ninh Son District	In preparing materials for construction phase	Included in the construction contract



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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
		- Stone and sand will be purchased from Phan Rang City, which is 5-10 km away to the sites . Construction contractor needs to check license and environmental mitigation measures of such quarry;				
Impact on existing irrigation systems	No impact on existing irrigation system	-				
Cultural objects or graves found	Avoiding and minimizing impacts on cultural objects and graves	-If any cultural object and/or grave is found during construction phase, the construction activities at those places need to be temporarily stopped and local authorities should be immediately informed to deal with the issue; - Propose form of compensation need to be undertaken after consultation with households (if graves) suffering impact and the construction contractor should provide the needed support to resettle graves elsewhere or to communes for cultural objects found;	Construction contractor, Ninh Thuan PPMU, CPCs of An Hai and Nhon Son communes	Construction areas, Deo Cau borrow pit, disposal sites in An Hai and Phuoc Hai communes	During construction phase	Included in the construction contract
Environmental recovery activities	Ensure damaged environment and related infrastructures will be recovered after completing construction	- During construction, any damage to local infrastructures will be compensated and mitigated by construction contractor as mentioned above; - The environmental issues emerged during recovery activities such as noise, dust, gases, solid waste, hazardous waste, water pollution etc. will be	Construction contractor; Ninh Thuan PPMU; DARD of Ninh Thuan and Ninh Phuoc district; An Hai CPC	Surrounding areas of Tuan Tu weir, Siltation tank, pumping stations, along install pipeline roads as well as Deo Cau borrow pit of sub-project in Nhon Son -	During construction phase	Included in the construction contract

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Impacts	Mitigation Measures					
	Objectives	Mitigation measures	Responsibility	Location	Time	Cost
		<p>handled with similar measures indicated in related sections above;</p> <ul style="list-style-type: none"> <li>- Planting trees after completing construction activities.</li> <li>- Repairing damaged infrastructures as soon as possible;</li> <li>- Restore the landscape in and around borrow pit to avoid landslides after exploitation completed;</li> </ul>		Ninh Son District ;		
<b>Operation phase</b>						
Water pipelines, siltation tank's drains & tanks obstructing or flooding because of not cleaning dredging on time	Ensure water flow capacity of water pipeline, drainage function of siltation tank's drains	<ul style="list-style-type: none"> <li>- Regularly check and maintain water pipeline, siltation tank's drains &amp; canals;</li> <li>- Periodically dredge culverts, drains and canals after each harvest or after heavy rainfalls that cause erosion to hillside.</li> </ul>	<ul style="list-style-type: none"> <li>-The Exploitation of Irrigation Works Company Ninh Thuan, branch of Ninh Phuoc</li> <li>- Invest Enterprise</li> <li>- An Hai APC/WUO</li> <li>- Officials of communes</li> </ul>	Along water pipeline, drains, tanks of Nam Cuong, Hoa Thanh Villages - An Hai Commune	During operational phase	Operational and maintenance cost
Erosion or land slide	Manage erosion and land slide	<ul style="list-style-type: none"> <li>- Consider the need to reinforce water pipelines, drains of siltation tank , management road sides and weir slopes;</li> <li>- Plant and maintain regularly vegetation covering on road sides and dam slopes;</li> <li>- Regularly maintain water pipelines, drains of siltation tank , management road and weir slopes;</li> <li>- Reinforce, compact and plant grass at the roads' side slopes and weir slopes;-</li> </ul>	<p>The Exploitation of Irrigation Works Company Ninh Thuan, branch of Ninh Phuoc Enterprise</p> <p>An Hai Agricultural Production Cooperative (APC)</p>	Along water pipelines, drains of siltation tank, management road and Tuan Tu weir slopes	During operational phase	Operational and maintenance cost

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Impacts	Objectives	Mitigation Measures				
		Mitigation measures	Responsibility	Location	Time	Cost
		<ul style="list-style-type: none"> <li>- Regularly maintain and repair broken part of infrastructures (weir crest, pipelines, management , and other works .)</li> </ul>				
Water quality could be pollution due to increase of fertilizer or pesticide volume	Mitigate impacts on surface water	<ul style="list-style-type: none"> <li>- Cooperate with the Ninh Phuoc extension service agency to ensure that farmers receive training on sustainable farming methods, pest management;</li> <li>- Pits to collect containers of pesticides, fertilizer must be constructed far from Tuan Tu reservoir and flood areas; or recommend people collecting these wastes, do not scatter them on field, canals;</li> <li>- Biological, environmental friendly pesticides must be introduced and prioritized to use;</li> <li>- Proper selection of pesticides, which are less toxic and less durable in environment, must be applied;</li> <li>- Schedule of pesticides spreading must be appropriate to reduce the volume to a minimum in order to reduce pollution to local environment.</li> </ul>	DARD of Ninh Thuan Province and DARD of Ninh Phuoc District; The Exploitation of Irrigation Works Company Ninh Thuan, branch of Ninh Phuoc.	The downstream of Tuan Tu weir and beneficiary area communes of Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune	During operational phase	Included in operational and maintenance cost

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## 5.2 Environmental monitoring

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

### 5.2.1 Environmental effect monitoring

The environmental effect monitoring is shown in the following table:

**Table 5. Environmental effect monitoring**

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
<b>Construction Stage</b>						
Control of erosion or sedimentation	Erosion or sedimentation caused by clearing or earthworks	In slope areas of upgraded reservoir, spillways, and siltation tank, 15 water tanks of Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	Included in the civil work contracts and CSC contracts
Polluted soil	Polluted soil caused by leakage of oil and other chemical substances	Tuan Tu reservoir, Lu river, existing canal (in upstream of Tuan Tu weir) and other water surface sources	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	
Control of air quality and noise impact	Noise generated from sub-project areas and its equipment	Construction sites and along the installed pipeline roads	Observation, document review and public consultation	Weekly and monthly	Contractor and CSC	Included in the civil work contracts and CSC contracts
Control of water quality	Sediment loads, rubbish, oil or other visible pollutants	Significant water bodies in sub-project areas	Observation, document review and public consultation, worker interview	Weekly and after large rain occurrences	Contractor and CSC	
Control of solid waste and hazardous waste	Solid waste, hazardous waste	All sub-project construction sites, 3 disposal sites and 3 camp sites in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	Included in the civil work contracts and CSC contracts
Control of local flooding	Status on local flooding	In residential areas in	Observation, review and	When heavy rain occurred	Contractor and CSC	

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		downstream of Tuan Tu reservoir, Lu river , existing canal in upstream of Tuan Tu weir of An Hai Commune ;	public consultation			
Ensuring safe for travelling and business during installing pipeline along the road (Traffic safety)	Traffic safety	Along installed pipeline roads and on weir crests especially for communities using these facilities in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	
Minimize impacts on local ecology	Private trees and agricultural plants that have been taken into account in compensation plans;	Areas surrounded the upgraded head work, pumping stations, siltation tank, power-substations in Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	
Minimize adverse impacts to existing infrastructures	To identify locations of underground components: electricity, domestic water supply ( if any) obtain the agreement of local authorities in using transport routes.	All roads' components used by the sub-project area & transportation routes in An Hai and An Phuoc Commune;	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	Included in the civil work contracts and CSC contracts
Minimize disturbances to local people's life due to workers	Camp sanitation Carry out HIV/AIDS and sex transmission infection prevention program;	Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune	Observation, review and public consultation	Weekly and monthly	Contractor and CSC	

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	<p>Propagate and raise awareness of the construction workers to maintain discipline, habits and customs and create good relationships with local people</p> <p>To ensure hygiene and food safety;</p> <p>-</p>					
To ensure good health and safety to local people and workers	<p>- Safety equipment such as safety shoes, helmets, harness etc.</p> <p>-A first aid kit at each construction site</p> <p>-</p> <p>-</p>	<p>Tuan Tu, Nam Cuong, Hoa Thanh Villages</p> <p>- An Hai Commune as well as other communes along transportation routes of materials and 03 camps of sub-project</p>	<p>Observation, review and public consultation</p>	<p>Weekly and monthly</p>	<p>Contractor and CSC</p>	Included in the civil work contracts and CSC contracts
Minimize environmental impacts caused by mining raw materials for construction	<p>-Safety equipment to worker</p> <p>Trucks/vehicle need to cover</p> <p>- Check license and environmental mitigation measures of sand&amp; stone quarries</p>	<p>Areas of Deo Cau borrow pits are in Nhon Son Commune- Ninh Son District</p>	<p>Observation, review and public consultation</p>	<p>Weekly and monthly</p>	<p>Contractor and CSC</p>	
Ensure damaged environment and related infrastructures will be recovered after completing construction	<p>- Planting trees after completing construction activities.</p> <p>- Recovering damaged infrastructures</p>	<p>Surrounding areas of Tuan Tu weir, Siltation tank, pumping stations, along install pipeline roads, Deo Cau borrow pit</p>	<p>Observation, review and public consultation</p>	<p>After completing construction</p>	<p>Contractor and CSC</p>	

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	- Restore the landscape in and around borrow pit					
<b>Operational Stage</b>						
Ensure water flow capacity of water pipeline, drainage function of siltation tank's drains	-Flow capacity of pipelines -Siltation tank' drains	Along water pipeline, drains, tanks of Nam Cuong, Hoa Thanh Villages - An Hai Commune	Observation, review and public consultation	Monthly	IMC Ninh Thuan, branch of Ninh Phuoc -Enterprise -An Hai APC/WUO	Included in operation cost
Manage erosion and land slide	Status on erosion and landslide	Along water pipelines, drains of siltation tank, management road and Tuan Tu weir slopes	Observation, review and public consultation	Monthly	IMC Ninh Thuan, branch of Ninh Phuoc -Enterprise -An Hai APC/WUO	Included in operation cost
Surface water quality	Turbidity, presence of grease; chemicals of fertilizers and pesticides	Water of upstream of Tuan Tu weir/ intake of main pumping station which they provide water for irrigation	Observation, document review and public consultation	2 times per year for first 2 years (1 time in wet season and 1 time in dry season)	IMC Ninh Thuan, branch of Ninh Phuoc -Enterprise -An Hai APC/WUO	Included in operation cost

### 5.2.2 Environmental compliance monitoring

The environmental effect monitoring is shown in the following table:

**Table 63. Environmental compliance monitoring**

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
<b>Construction Stage</b>						
EMP implementation provisions in construction contracts, construction supervision contracts	Availability of EMP implementation provisions in contracts	N/a	Check contracts	First monitoring time	LIC, CPMU, Ninh Thuan PPMU	Included in the LIC contract and CSC contract
Manpower to implement EMP	Environment staff mobilization at Ninh Thuan PPMU, supervisor, contractors	N/a	Discussion with stakeholders, document review	Every 6 months	Construction supervisor consultant (CSC), LIC, Ninh Thuan	Included in the LIC contract and CSC contract



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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					PPMU	
Landslide, erosion and sedimentation controls	Condition and capacity of controls Performance of all mitigation measure	Throughout construction sites	Observation, document review and public consultation	Weekly, monthly or after heavy raining	Construction supervisor consultant, LIC, Ninh Thuan PPMU	Included in the LIC and CSC contracts
Surface water pollution	Content of turbidity, grease Performance of all mitigation measure	Tuan Tu reservoirs and Lu river in downstream of Tuan Tu weir	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	
Soil contamination	Solid waste, grease availability Performance of all mitigation measure	Throughout construction sites	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	
Materials storage	Condition of materials storage area	Throughout construction sites, borrow pits	Observation, document review and public consultation and worker interview	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/ fuel leaks	Throughout construction sites	Observation, document review and public consultation and worker interview	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU	
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation, document review and worker interview	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU	
Vegetation clearing	Boundaries of vegetation clearing	Areas of sensitive vegetation	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU	
Solid wastes	Dustbins and mobile	In all	Observation,	Weekly,	Construction	

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
management on the site	septic tanks at work site Check with waste generation, collected, transported and treated manners and documents Performance of all mitigation measure	construction sites	document review and worker interview	monthly or when community's feedback is raised	supervisor consultant, LIC, Ninh Thuan PPMU,	
Waste disposal	Site cleanliness and condition; temporary waste storage area	Throughout construction sites, disposal sites	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU	
Local flooding	Possibility of local flooding due to construction activities Performance of all mitigation measure	Throughout construction sites	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU	Ditto
Traffic accident may increase and difficulty for usual life of local people	Availability of signals or staff to control/guide road user at site	Install pipeline Road at all villages around the sub-project	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto
Impact on terrestrial ecology	(i) if are trees cut outside of row; (ii) if re-plant vegetable cover	Install pipeline Road Deo Cau borrow pits and 03 disposal sites	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto
Disturbance to local people's life due to construction workers' presence	Status of workers: registration to local authorities and conflicts in the areas between local residents and workers	Throughout construction sites	Observation, document review and public consultation	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto
Risks to health and safety to local people and workers	Equipment available; percent of workers equipped with; Provision of any warning signals in the sites Performance of all mitigation measure	Throughout construction sites	Observation, document review and public consultation and worker interview	Weekly, monthly or when community's feedback is raised	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Cultural and historical heritages	Check each case and performance of contractors	Throughout construction site	Observation and public consultation and document review	If any	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto
Environment recovery	Clearance activities Performance of all mitigation measure	Worksites, and disposal locations	Observation and public consultation	Once before hand over	Construction supervisor consultant, LIC, Ninh Thuan PPMU,	Ditto
<b>Operation Stage</b>						
Water pipelines, siltation tank's drains & tanks obstructing or flooding	Ensure water pipeline, siltation tank's drain & tanks to be operated well	Water pipeline, drains, tanks	Observation and public consultation	6 monthly for first 5 years of operation	IMC Ninh Thuan , branch of Ninh Phuoc -Enterprise & An Hai APC/WUO	Included in operational stage budge
Impact on water quality due to use of fertilizer or pesticide	Water usage safety	Reservoirs; canals and the downstream of reservoirs	Observation and discussion with local authority	6 monthly for first 5 years of operation	IMC Ninh Thuan , branch of Ninh Phuoc -Enterprise & An Hai APC/WUO	
Erosion or land slide	Ensure the reservoirs, canals/ roads and other works to be operated well	All works built and upgraded areas	Observation and discussion with local authority	6 monthly for first 5 years of operation	IMC Ninh Thuan , branch of Ninh Phuoc -Enterprise & An Hai APC/WUO	
Environment recovery	Ensure environment is restored in its original condition	In all sub-project areas	Observation and discussion with local authority	6 monthly for first 5 years of operation	IMC Ninh Thuan , branch of Ninh Phuoc -Enterprise & An Hai APC/WUO	

### 5.3 Building capacity for EMP implementation

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

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

**Table 7. Schedule of training on capacity building**

Agency	Session	Participant	Frequency of training	Duration and type	Responsibility	Cost
Ninh Thuan PPMU	Environmental monitoring and report preparation	Environmental staffs, engineers	1 time when starting the project and then update it, if any, depending on implementation	1 day of training	CPMU/ LIC	Included in the project management cost and LIC contract
CSC	Environmental monitoring and report preparation	People who are in charge of environment and people related to environmental management	1 time when starting the project and then update it, if any, depending on implementation	1 day of training	CPMU/ LIC	Included in the project management cost and LIC contract
Construction Contractors	Implement mitigation measures	Main contractors report to Ninh Thuan PPMU	1 time when signing contract then update it, if any, depending on implementation	1 day of training,	CPMU/ LIC	Included in the project management cost and LIC contract

#### 5.4 Budget for EMP implementation

The budget allocation for implementation of EMP of sub-project has been described in following table:

**Table 8. Budget for EMP implementation**

Item	Preparation phase	Construction phase	Operation phase
Construction supervision consultant		Included in the contract with Ninh Thuan PPMU	
Internal monitoring of Ninh Thuan PPMU	Included in the project management cost of Ninh Thuan PPMU	Include in the contract of CC, CSC and Ninh Thuan PPMU management cost.	Province and local budget
Implementing mitigation measures	Sub-project preparation cost	Included in the construction contracts	Operation and maintenance cost
Public consultation and information disclosure	Included in IEE preparation consultant contract	Included in the contract of civil works, CSC and Ninh Thuan PPMU management cost.	Operation and maintenance cost

## 6. IMPLEMENTATION RESPONSIBILITY AND REPORTING

### 6.1 Implementation responsibility

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

**Table 9. Responsibility of stakeholders**

Agency	Responsibilities
CPMU	<ul style="list-style-type: none"> <li>- Recruit consultant for preparing safeguard policies;</li> <li>- Review, adopt and submit to ADB IEE reports;</li> <li>- Assign LIC to monitor EMP implementation;</li> <li>- Guide Ninh Thuan PPMU to integrate EMP into tender documents/ CSC contract;</li> <li>- Review monitoring reports of LIC and internal reports of Ninh Thuan PPMU;</li> <li>- Report EMP implementation to ADB;</li> <li>- Assign experienced staff to follow up and monitor EMP implementation.</li> <li>-</li> </ul>
- LIC	<ul style="list-style-type: none"> <li>- Prepare manual for EMP implementation and train on EMP implementation for IRDPCP, CSCs and CCs;</li> <li>- Help Ninh Thuan PPMU integrate environmental safeguard requirements specified in the EMP into bidding documents/ construction supervision and construction contracts;</li> <li>- Periodically monitor EMP compliance every 6 months;</li> <li>- Report monitoring results and recommendations on EMP implementation to CPMU and sponsor for every 6 months</li> <li>-</li> </ul>
- Ninh Thuan PPMU	<ul style="list-style-type: none"> <li>- Ninh Thuan PPMU is liable for any recommendations regarding improvement of the project with the aim of protecting and maintaining the environment. It Includes environmental complaints and complaints resolution related to sub-project implementation;</li> <li>- Appoint specialized personnel to monitor environment of the sub-project;</li> <li>- Disclose EMP information at CPC of the project site</li> <li>- Integrate environmental requirements, including sanctions for failure to comply EMP into bids / contracts with CC and CSC;</li> <li>- Instruct and approve site EMP prepared by construction contractor;</li> <li>- Support and coordinate with the EMP implementation units;</li> <li>- Ensure adequate fund for EMP implementation;</li> <li>- Arrange and join capacity building training on EMP implementation conducted by LIC;</li> <li>- Periodically report EMP implementation to CPMU and DONRE;</li> </ul>
Construction supervision consultant (CSC)	<ul style="list-style-type: none"> <li>- Appoint staffs to be in charge of environment and participate in training courses conducted by LIC;</li> <li>- Review EMP prepared by contractors and submitting it to Ninh Thuan PPMU to get approval.</li> <li>- Beside monitor construction quality, CSC also implement compliance monitoring on environmental safeguard of construction contractors every day as stipulated in SEMP;</li> <li>- Report monitoring results and findings to Ninh Thuan PPMU monthly;</li> </ul>

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Agency	- Responsibilities
Construction contractor	<ul style="list-style-type: none"> <li>- Appoint staffs to monitor environmental issues of the construction. This staff can be a concurrent staff if the workload of environmental is not heavy.</li> <li>- Base on the EMP, CC will prepare a SEMP;</li> <li>- Implement mitigation measures to minimize potential negative impacts as instructed in the EMP;</li> <li>- Closely coordinates with local communities to perform environmental mitigation measures during construction process;</li> <li>- Ensure that all construction activities have complete documents from the relevant authorities;</li> <li>- Implement all measures to minimize negative impacts and to protect environment;</li> <li>- Ensure that staff and employees understand the process and their duties in the EMP;</li> <li>- Report to Ninh Thuan PPMU the difficulties and problems, if any;</li> <li>- Report to stakeholders the environmental issues , propose and carry out environmental corrective action plan;</li> </ul>
Ninh Thuan PPC/ DONRE	<ul style="list-style-type: none"> <li>- Monitor any violation under policies on environmental management and protection of Vietnam;</li> <li>- Supervise contractors' compliance with agreed mitigation measures in EMP/Site EMP</li> <li>- Evaluate any change of the design which can cause environmental impacts;</li> </ul>
Ninh Phuoc DPC/ DONRE	<ul style="list-style-type: none"> <li>- Approve EPP of the sub-project in accordance with the provisions of Vietnamese laws;</li> <li>- Monitor EMP implementation through internal monitoring system of the DPC;</li> </ul>
Social organizations, women union and other associations	<ul style="list-style-type: none"> <li>- Play a key role as a bridge between local community and PCs;</li> <li>- Participate in the Community Monitoring and Community Supervision Board;</li> <li>- Mobilize community participation in sub-project implementation;</li> <li>- Support the Ninh Thuan PPMU in monitoring contractors' compliance to prevent damages to public facilities ;</li> <li>- Participate in resolving environmental problems.</li> </ul>
Local communities	<ul style="list-style-type: none"> <li>- In Vietnam, the communities have the right and responsibility to regularly monitor environmental activities in the construction process to ensure that the rights and their safety is protected fully and mitigation measures are implemented effectively;</li> <li>- In case of problems, local people will report to community team, contractors or Ninh Thuan PPMU.</li> </ul>

## 6.2 Report system

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

**Table 104. Monitoring and reporting system**

Phase	Report	Frequency	Responsibility	Submit to
Construction	Periodically report on implementation of mitigation measures: Present in details of EMP activities of the sub-project/packages and monitoring results.	Every month	Construction contractor	Ninh Thuan PPMU and CSC
	Periodically report on EMP implementation of construction contractor: Present in details of EMP activities of the sub-project and monitoring results.	Every month	CSC	Ninh Thuan PPMU
	Periodically report on EMP implementation of the sub-project: Present in details of EMP activities of the sub-project and monitoring results.	Every 3 month during construction phase	Ninh Thuan PPMU	- CPMU; - DONRE of Ninh Phuoc district;
	Periodically monitoring report on EMP implementation of the sub-project: Present in details environmental activities of the sub-project and activities in compliance with EMP of the sub-project and monitoring results.	Every 6 month during construction phase	CPMU/ LIC	ADB
Operation	Periodically report on EMP implementation at operation: Present in details activities in compliance with EMP of the sub-project in the operation phase.	Every 6 month in first two years	District Sub-project Operation Agency	CPMU

## 7. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Public consultation and information disclosure of the sub-project should be implemented continuously from the design phase to the construction phase. These consist of collecting community ideas/ as well as encouraging local people' participation in preparing and implementing the sub-project's EMP. Public consultation consist in preparing IEE of the sub-project. The minutes and pictures of public consultation are in Annex 1 & Annex 2.

### 7.1 Public consultation in the sub-project preparation phase

#### 7.1.1 Description of activities to date

**Table 11. Public consultation description**

No.	Village/ commune	Stage	Carried out by	Meeting location	Date	Total participants	Female	Ratio of female participants
<b>1</b>	<b>1<sup>st</sup> Round of consultation meetings</b>	Technical Design /	TD Consultants/ Ninh Thuan PPMU	An Hải CPC meeting hall	22/8/2016	60	19	31.7
<b>2</b>	<b>2<sup>nd</sup> Round of consultation meetings</b>							
	Tuan Tu Village	Technical Design	TD Consultants/ Ninh Thuan PPMU	village cultural house	Morning of 10/10/2016	80	23	28.8
	Hòa Thạnh Village	Technical Design	TD Consultants/ Ninh Thuan PPMU	village cultural house	Afternoon of 10/10/2016	33	6	18.2
	Nam Cường Village	Technical Design	TD Consultants/ Ninh Thuan PPMU	village cultural house	Morning of 11/10/2016	30	8	26.7
<b>3</b>	<b>3<sup>rd</sup> Round of consultation meetings</b> (additional participants as Chăm ethnic women)	Technical Design	TD Consultants /Ninh Thuan PPMU	Tuan Tu village cultural house	17-18/11/2016	30	30	100
<b>4</b>	<b>4<sup>th</sup> Round of Consultation Meeting</b>	IEE Preparation						
	An Hai Commune		LIC/Ninh Thuan PPMU	An Hai CPC meeting hall	16/5/2017	39	23	59
	Phuoc Hai Commune		LIC/Ninh Thuan PPMU	Phuoc Hai CPC	16/5/2017	28	14	50
	<b>Total</b>					<b>300</b>	<b>123</b>	<b>41</b>



## **7.1.2 Outcomes of the public consultation to date**

All ideas/concerns from local people during the public consultation are into the IEE as stated in table 4 (EMP) of IEE and 100% of participants agreed with development of sub-project. See the summary of the main ideas/concerns in the table below:

### **Opinions of community consultation during Technical design preparation**

- Most of farmers recognized positive impacts of the component project and expressed their support to the project and expected that the project to be implemented soon and bring in benefits for production development in the area.
- Local authorities and people in An Hai and Phuoc Hai communes agreed with the preliminary design of project scale and location.
- The component project has met the concerns and aspirations of farmers who are facing difficulties in water supply and irrigation for agriculture production as well as in the organization of agricultural production based on value chain.
- Information on the component project "Development of infrastructure for concentrated vegetable production area in An Hai commune, Ninh Phuoc district, Ninh Thuan province" has been and will continue to be disseminated to beneficiaries and affected people through village loudspeaker systems and village meetings from the start of the construction phase till the operation and maintenance phase. The People's Committees of An Hai and Phuoc Hai Communes are responsible for ensuring that all local people, especially those affected, will receive full information on the component project.
- The People's Committee of An Hai Commune promised to set up a Community Supervision Board, ensuring that at least 35% of the women will be involved and participate in the supervision process as required by the project.

### **Opinions of community consultation during IEE preparation**

- The people totally agreed with the project implementation as the Project brings the benefits for agricultural production.
- The Project should be implemented soon to avoid affecting people's production, especially AHs, when building tanks and installing water pipelines.
- The contractor should carry out mitigation measures to avoid dust and water pollution and to ensure traffic safety and avoid adverse impacts on people's production activities.
- After finishing building tanks and installing water pipes, the original status of the area must be recovered. Construction wastes must be cleaned and disposed at waste dumps approved by the CPC.
- The contractor was required to spray water during construction to avoid dust, especially when transporting materials across residential areas.

**Table 5. Main opinions are focused in of public consultation meeting**

Issues raised		Required follow-up actions?
Description	By Whom?	
Potential damage existing roads to be installed pipelines	Local people	Contractors' trucks with maximum capacity of less than 10 tons;
Abundant excavated soil from constructional activities (if any) to be used by local people	Local people	Contractors have to notify availability of abundant excavated soil to local people if these are interested in using it.
Original environment recovery	Local people	<ul style="list-style-type: none"> <li>- Contractors have to recover environment at sites as found before construction;</li> <li>- Inappropriate landfills of the sub-project must be removed;</li> <li>- Recover status of mines, especially borrow pits;</li> <li>- Land occupied around sites and on roads must be restored as found before occupation,</li> <li>- Check survival of trees and plants complementarily if any;</li> </ul>
Bad quality of the proposed works	Local people	Local people agree to take part in community monitoring team set up by Ninh Thuan PPMU and local authorities;

## 7.2 Consultation in future

There will be other public consultations in future and their implementation plans has been shown as following:

**Table 6. Expected public consultation activities**

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

### **7.3 EMP disclosure**

- After adopted, Ninh Thuan PPMU is responsible for posting IEE summary at An Hai and Phuoc Hai Commune People's Committees;
- IEE will be posted on website of ADB.

## **8. GRIEVANCE REDRESS MECHANISM**

### **8.1 Purpose of the mechanism**

During the deployment of the sub-project, local people are informed environmental protection activities such as EMP. Negative impacts on the environment may occur during the construction and operational phases. Any comments/ suggestions of local people will be solved quickly, transparently and in compliance of laws, particularly for affected people by the sub-project. Complaint handling mechanism will be classified by level and responsibilities of involved parties.

### **8.2 Grievance redress mechanism**

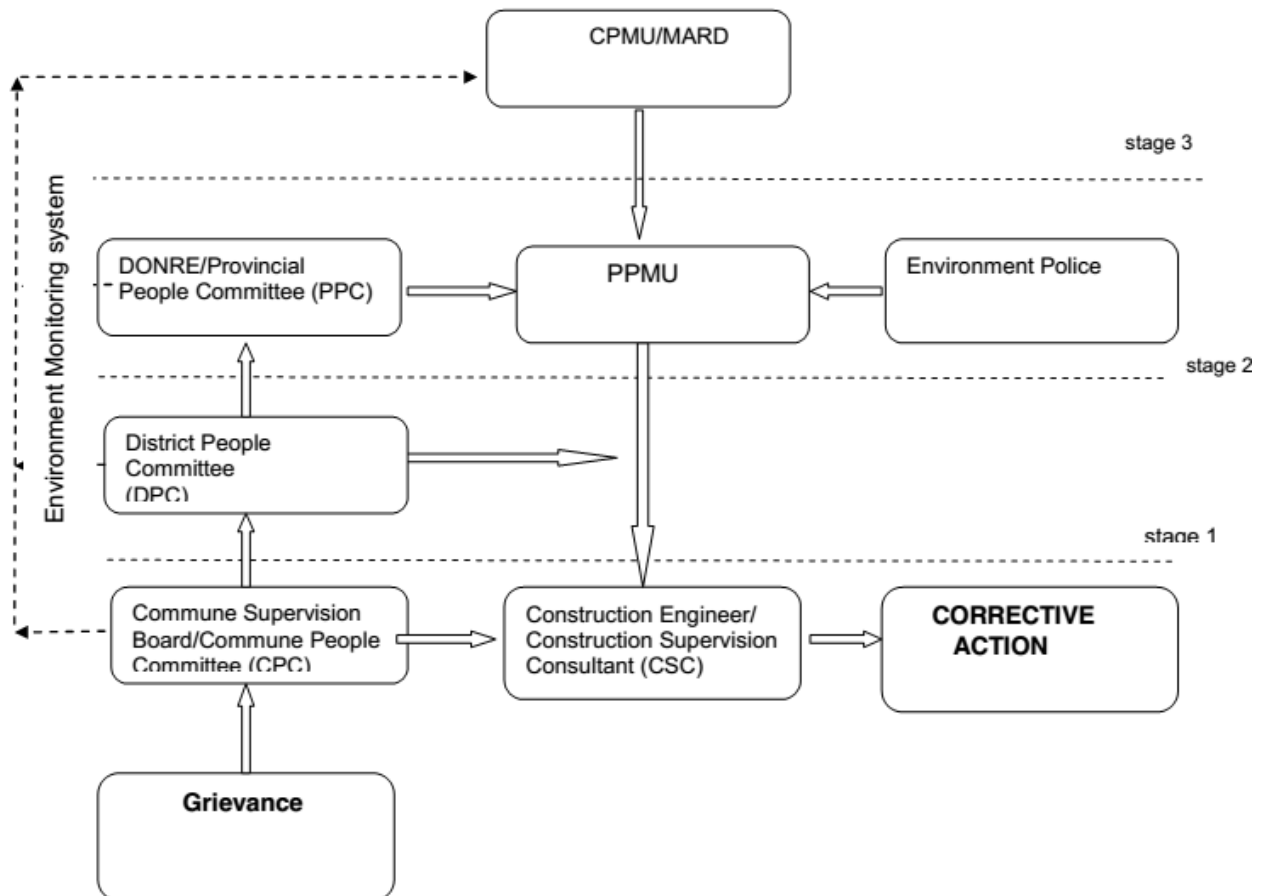
Per the environmental management frame, there are 3 steps to redress complaint as below:

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

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

Stage 3: If more than 15 days pass without response from Ninh Phuoc DPC, the complainant may submit a complaint to the Ninh Thuan PPC (through Ninh Thuan DONRE) then, Ninh Thuan PPC will require Ninh Phuoc DPC to solve the complaint. In case the complaint is still not resolved, Ninh Thuan PPC will require environmental police to investigate and requested stakeholders to resolve the complaint. See the mechanism in figure 1 below:

**Figure 2. Grievance redresses mechanism**



## 9. CONCLUSION, COMMITMENT AND RECOMMENDATION

### 9.1 Conclusion

The results of environmental screening and environmental impact assessment show that the sub-project may cause some environmental impacts, but that most of such impacts are minor or insignificant, some are moderate. However, the appropriate mitigation measures have also proposed to manage the negative impacts and maximize the benefits of the sub-project. The responsibilities of implementation and monitoring of the stakeholders have also been identified to ensure environmental compliance.

### 9.2 Commitment

Ninh Thuan PPMU, the owner of the sub-project “An Hai Commune ‘s safety vegetable production infrastructure development subproject “ commits themselves to:

Implement requirements of environmental safeguards as stated in IEE via information dissemination, integrating environmental safety as stated in this IEE in bidding documents, in construction and in the CSC contracts; mobilize human resources and monitor internally the IEE compliance;

Report environmental safeguards implementation to Ninh Thuan DONRE and CPMU periodically as specified in the IEE;

Compensate and take measures against environmental issues if there is any arising during construction and operation of the sub-project;

Handle complaints if any.

### 9.3 Recommendations

Based on the IEE report, the Ninh Thuan PPMU would recommend that:

No further environmental assessment is needed because the impacts on environment is minor or insignificant;

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Integrated Rural Development in Central Provinces Project*

Based on IEE, The Ninh Thuan PPMU would like to request functional authorities to give their approval of the IEE for “An Hai Commune 's safety vegetable production infrastructure development subproject” to create the basis for next implementation steps, ensuring the implementation progress, effectiveness and benefits of the project.

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## 10. ANNEXES

### ANNEX 1: PUBLIC CONSULTATION PICTURES AND AT THE SUB-PROJECT SITES

	 <p>Pumping station</p> <p>Storage pond</p>
Status of Tuan Tu Weir	Location of siltation tank
	
Water pipeline to be installed along the village road of Tuan Tu residential area	Location of wholesale market
	
Public Consultation meeting at Phuoc Hai CPC in Morning of 16 May 2017	Public consultation meeting at An Hai CPC in Afternoon of 16 May 2017




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## ANNEX 2: MINUTES OF PUBLIC CONSULTATION

Dự án Phát triển nông thôn tổng hợp các tỉnh Miền Trung -Khoản vay bổ sung -L3173

 CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM  
Độc lập – Tự do – Hạnh phúc  
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 CSAT: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

ngày 16 tháng 5 năm 2017.

Tên Tiểu dự án : Phát triển nông thôn tổng hợp các tỉnh Miền Trung - 3A3  
Xã/phường: An Hải Huyện: Ninh Hải tỉnh: Ninh Thuận

I. Thành phần tham dự:

- Ông/Bà <u>Đinh Thế Lợi</u>	Chức vụ: <u>PCT UBND xã An Hải</u>
- Ông/Bà <u>Tết Văn Hay</u>	Chức vụ: <u>PCT Mặt trận T.R.V.N xã An Hải</u>
- Ông/Bà <u>Nguyễn Thế Văn</u>	Chức vụ: <u>Cán bộ CSAT Ban Chỉ đạo An ninh/Tổng hợp/CPVC</u>
- Ông/Bà <u>Tôn Đức Lợi</u>	Chức vụ: <u>Cán bộ CSAT Ban Chỉ đạo An ninh/Tổng hợp/CPVC</u>
- Ông/Bà <u>Đoàn Thị Nham</u>	Chức vụ: <u>Tư vấn Môi trường LLC</u>
- Ông/Bà <u>Nguyễn Văn Phú</u>	Chức vụ: <u>Tư vấn Tái định cư LLC</u>
- Ông/Bà <u>Đoàn Thị Ngọc Phụng</u>	Chức vụ: <u>Tư vấn Các cơ sở LLC</u>
- Ông/Bà <u>Vương Thị Thanh</u>	Chức vụ: <u>Tư vấn An ninh LLC</u>

- Đại diện những hộ bị ảnh hưởng/hưởng lợi : ..... người (trong đó: nữ ..... người, nam ..... người). (Xem danh sách đại biểu tham dự đính kèm)

II. Nội dung

2.1. Các nội dung phổ biến :

- Cung cấp các thông tin về dự án như địa điểm, quy mô, các hạng mục của TDA, các thông số kỹ thuật cơ bản
- Chính sách an toàn của dự án bao gồm : chính sách an toàn về môi trường, Tái định cư và Kế hoạch phát triển dân tộc thiểu số, Kế hoạch hành động giới

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 bị tổn thương, các 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 tái định cư, quyền lợi của người bị ảnh hưởng, biện pháp giảm thiểu tối đa nhằm tác động ít nhất đến những người bị ảnh hưởng
- Tham vấn nhu cầu đào tạo của cả các hộ bị ảnh hưởng và các hộ hưởng lợi

1

a. Mrs. Anthony.

- 2



**Initial Environmental Examination (IEE)**

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Integrated Rural Development in Central Provinces Project

Dự án Phát triển nông thôn tổng hợp các tỉnh Miền Trung - Khoản vay bổ sung -LS173

d. Đi. Báo  
Những cáo về kế hoạch trồng cây mướp, cây khổ qua  
cây lòi với các cây khác và sự phân vùng khác

Cuộc họp các bên thống nhất và kết thúc vào lúc 16h ngày 16 tháng 5 năm 2017

Đại diện Ban QLDA tỉnh

Thái  
Trần Bá Lợi

Đại diện UBND xã

  
Bùi Thế Ly

Đại diện Cộng đồng

Phạm  
Tô Văn Hay

Đại diện tư vấn

Phạm  
Le Thị Hồng Phương

3

# Initial Environmental Examination (IEE)

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Integrated Rural Development in Central Provinces Project

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 Tái định cư và Dân tộc thiểu số)

(Danh sách đính kèm biên bản cuộc họp ngày 16... tháng 5... Năm 2017... tại UBND xã An Hai, H. Ninh Phước, T. Ninh Thuận)

Tên ĐATP: Xây dựng hạ tầng phục vụ khai thác sản xuất rau an toàn tập trung tại xã An Hai  
Xã: An Hai, huyện: Ninh Hải, tỉnh: Ninh Thuận

STT	Họ và tên	Giới tính	Chức vụ/Địa chỉ	Ký tên
1	Lê Văn Hay	Nam	Phó ET HTTR xã	
2	Hồ Minh Huyền	Nam	Trưởng thôn Nam Cường	
3	Võ Văn Tú	Nam	Chủ tịch Cao Tiến Thôn Hòa Thuận	
4	Bùi Thi Ly	Nam	Phó chủ tịch UBND xã	
5	Nguyễn Văn Hồng	Nam	Trưởng thôn Nam Cường	
6	Đào Chí	Nam	Thôn Thuận Hải	
7	Phan Cai	Nam	Thôn Hòa Thuận	
8	Nguyễn Đình Thanh	Nam	Thôn Hòa Thuận	
9	Trần Văn Cử	Nam	Thôn Hòa Thuận	
10	Nguyễn Văn Quát	Nam	Thôn Nam Cường	
11	Nguyễn Thị Lệ	Nữ	Thôn Hòa Thuận	
12	Nguyễn Ngọc Thuận	Nam	Thôn Long Bình	
13	Đỗ Thu Chinh	Nữ	Thôn Hòa Thuận	
14	Trương Thu Mai Dung	Nữ	Chủ tịch KDP PN xã	
15	Lê Thị Xuyến	Nữ	Thôn Nam Cường	
16	Nguyễn Thị Giỏi	Nữ	Thôn Nam Cường	
17	Đỗ Văn Lân	Nam	Thôn Thuận Hải	
18	Hứa Văn Bảy	Nam	Thôn Thuận Hải	
19	Ngô Văn Huỳnh	Nam	Thôn Thuận Tú	
20	Từ Công Toán	Nam	Thôn Thuận Tú	



**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project

**HỘI LHPN XÃ AN HẢI**  
**BAN THƯỜNG VỤ**

**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM**  
**Độc lập - Tự do - Hạnh Phúc**

**DANH SÁCH**  
**ĐẠI BIỂU THAM DỰ THAM VẤN CỘNG ĐỒNG VỀ DỰ ÁN THÀNH PHẦN**  
**XÂY DỰNG HẠ TẦNG PHỤC VỤ VÙNG SẢN XUẤT RAU AN TOÀN**

Stt	Họ Và Tên	Đơn vị	Dân tộc	Ghi chú <i>Địa điểm</i>
1	Châu Thị Ân	Tuần tú	Chăm	Tập trung Xã An Hải, Huyện Ninh Phước, Tỉnh Ninh Thuận.
2	Kiều Thị Bích Trâm	Tuần tú	Chăm	
3	Châu Thị Ánh Niêu	Tuần tú	Chăm	
4	Châu Thị Mây	Tuần tú	Chăm	
5	Châu Thị Hiếu	Tuần tú	Chăm	
6	Kiều Thị Chững	Tuần tú	Chăm	
7	Kiều Thị Thuyền	Tuần tú	Chăm	
8	Châu Thị Kim Thoa	Tuần tú	Chăm	
9	Châu Thị Anh Thư	Tuần tú	Chăm	
10	Kiều Thị Nỹ	Tuần tú	Chăm	
11	Kiều Thị Thủy Vân	Tuần tú	Chăm	
12	Châu Thị Yến	Tuần tú	Chăm	
13	Kiều Thị Cường	Tuần tú	Chăm	
14	Kiều Thị Kim Vân	Tuần tú	Chăm	
15	Đạo Thị Ni	Tuần tú	Chăm	
16	Tài Thị Kim Thoa	Tuần tú	Chăm	
17	Kiều Thị Hoa	Tuần tú	Chăm	
18	Ninh Thị Kim Cương	Tuần tú	Chăm	
19	Kiều Thị Ót	Tuần tú	Chăm	

An Hải, ngày 16 tháng 05 năm 2017

**TM. Hội LHPN Xã An Hải**

**Chủ tịch**



**Trương Thị Mai Dung**

# Initial Environmental Examination (IEE)

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Dự án Phát triển nông thôn tổng hợp các tỉnh Miền Trung -Khoản vay bổ sung -L3173

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

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 CSAT: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

..... ngày 16 tháng 7 năm 2017.

Tên Tiểu dự án : Phát triển Nông thôn Tổng hợp các tỉnh Miền Trung - 3AB  
Xã/phường: Phước Hải Huyện: Ninh Hảitỉnh: Ninh Thuận

### I. Thành phần tham dự:

- |   |   |
|---|---|
| - Ông/Bà: Hoàng Thanh Huy Thiến                                 | Chức vụ: PCT UBND Xã Phước Hải            |
| - Ông/Bà: Hoàng Văn Mạnh  | Chức vụ: CT UBND Mặt trận Tổ quốc Xã      |
| - Ông/Bà: Hoàng Văn Vĩnh  | Chức vụ: Ban Quản lý Dự án Trung ương OMC |
| - Ông/Bà: Trần Bá Lợi   | Chức vụ: Chủ tịch UBND Xã Phước Hải       |
| - Ông/Bà: Đỗ Thị Nhàn   | Chức vụ: Ủy viên Mặt trận Xã              |
| - Ông/Bà: Nguyễn Vĩnh Phước                                     | Chức vụ: Ủy viên Mặt trận Xã              |
| - Ông/Bà: Lê Thị Mỹ Phương                                      | Chức vụ: Ủy viên Mặt trận Xã              |
| - Ông/Bà: Vương Thanh Hùng                                      | Chức vụ: Ủy viên Mặt trận Xã              |
| - Đại diện những hộ bị ảnh hưởng/hưởng lợi : Ông Hoàng Đình Xén | Chức vụ: Ủy viên Mặt trận Xã              |
- Đại diện những hộ bị ảnh hưởng/hưởng lợi : 28 người (trong đó: nữ 14 người, nam 14 người). (Xem danh sách đại biểu tham dự đính kèm)

### II. Nội dung

#### 2.1. Các nội dung phổ biến :

- Cung cấp các thông tin về dự án như địa điểm, quy mô, các hạng mục của TDA, các thông số kỹ thuật cơ bản
- Chính sách an toàn của dự án bao gồm : chính sách an toàn về môi trường, Tái định cư và Kế hoạch phát triển dân tộc thiểu số, Kế hoạch hành động giới

#### 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 bị tổn thương, các 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 tái định cư, quyền lợi của người bị ảnh hưởng, biện pháp giảm thiểu tối đa nhằm tác động ít nhất đến những người bị ảnh hưởng
- Tham vấn nhu cầu đào tạo của cả các hộ bị ảnh hưởng và các hộ hưởng lợi



An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project

- Tham vấn về nhu cầu hỗ trợ và các biện pháp phục hồi cuộc sống, đền bù tái định cư phù hợp cho người bị ảnh hưởng

a. Mô trường  
Thất bại của công hồ Doan do khi xây Doan còn thiếu nước. Để sản xuất nông nghiệp.  
Mang nước vào rừng. Khi tưới phải có sản xuất rau củ.  
Nhà thầu cần đảm bảo bên pháp quản. Muốn để xây đến cuối, 5 năm nữa mới xong. Lưu lượng q/tả xây dựng.  
Thang giá phần thi công, cần đảm bảo hòa thuận nước, phải xây ngay từ lúc đầu.  
Khi xây phải đảm bảo các dân cư phải hết nhà ở, hướng đến môi trường tốt nhất.  
Nhà thầu cần thống nhất lịch. Khi công, có biến báo công trường, đảm bảo an toàn giao thông cho người qua lại.  
b. Tài chính  
Các kế toán phải đưa tổng kế hoạch tài chính, chi phí, đúng chi trường, chi phí tài chính của công trình.  
Đang dự án sẽ tiến hành để ổn định để công & sản xuất của các hồ bị ảnh hưởng.  
c. Công nghệ  
Hệ thống xử lý nước thải. Phải tham gia tập huấn, training. Mang lại kiến thức & kỹ thuật cho người dân.  
Dự án cần đưa phụ nữ tham gia vào các hoạt động của các ban giám sát. Phải có sự đồng ý của người dân.  
Lên kế hoạch các hồ ở đây. Từ khi có thể để hướng dẫn từ dự án này về dự án khác.  
d. Đào tạo  
Tổ chức các khóa học, mời các chuyên gia, tập huấn về công nghệ xử lý nước thải. Khi đó các kỹ thuật viên sẽ được đào tạo, nâng cao kiến thức. Phải có sự đồng ý của người dân. Phải có sự đồng ý của người dân. Phải có sự đồng ý của người dân.


**Initial Environmental Examination (IEE)**

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project

Dự án Phát triển nông thôn tổng hợp các tỉnh Miền Trung -Khoản vay bổ sung -L3173

Cuộc họp các bên thống nhất và kết thúc vào lúc 10h ngày 16 tháng 5 năm 2017

Đại diện Ban QLDA tỉnh

  
Trần Bá Luật

Đại diện Cộng đồng

  
Trần Văn Mạnh

Đại diện UBND xã  
P. CHỦ TỊCH



  
Huỳnh Bang Huy

Đại diện tư vấn

  
Đỗ Thị Nhân



An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project


 Xã An Lạc Huyện Phú Tân  
 Đã cấp  
 C HỢP  
 Dân tộc thiểu số)  
 Năm 207... tại Phòng hợp  
 UBND xã

(Tham vấn cộng đồng về Chính sách an toàn Tái định cư và Dân tộc thiểu số)

(Danh sách đính kèm biên bản cuộc họp ngày 16. tháng 5. Năm 2017 tại Phòng họp)

Xã....., huyện....., tỉnh.....

STT	Họ và tên	Giới tính	Chức vụ/Địa chỉ	Ký tên
1	Phan Văn Hùng	Nam	Lâm nông	Phan
2	Lê Văn Bình	Nam	Đoàn 847, Cầu Hai	Lê
3	Lê Văn Thịnh	Nam	AN-Hải-Lâm Nông	Lê
4	Ngô Ngọc Trường	Nam	Phước Hải-Lâm Nông	Ngô
5	Lê Thị Thảo	Nữ	Phước Hải	Lê
6	Lê Văn Dư	Nam	Từ Tâm 1, Phước Hải	Lê
7	Lê Văn Mạ	Nam	Từ Tâm 1, Phước Hải	Lê
8	Hà Mai Anh	Nam	Từ Tâm 1	Anh
9	Nguyễn Ngọc Anh	Nam	Từ Tâm 1	Anh
10	Nguyễn Văn Tèo	Nam	Từ Tâm 1	Tèo
11	Phạm Văn Khô	Nam	Từ Tâm 1	Khô
12	Nguyễn Hữu Lữ	Nam	Chủ tịch nông dân	Lữ
13	Đào Văn Mạnh	Nam	Chủ tịch một thôn	Mạnh
14	Phạm Lê Đức	Nam	Đội chấp hành	Đức
15	Điền Thị Lâm Viên	Nữ	phó chủ tịch phụ nữ	Viên
16	Nguyễn Văn Huy Thái	Nam	phó chủ tịch cơ sở xã	Thái
17	Lê Thị Liên	Nữ	Từ Tâm 1	Liên
18	Lê Thị Minh Tâm	Nữ	Từ Tâm 1	Tâm

# Initial Environmental Examination (IEE)

An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project

*Xã Phước Hòa (Xã Phước Hòa) - H. Ninh Phước*

Dự án Phát triển nông thôn tổng hợp các tỉnh Miền Trung - Khoản vay bổ sung - L3173

19	1	Phạm Thị Mỹ Nhung	Chủ tịch UBND xã	Phung
20	2	Đào Thị Mỹ Duyên	BCH hộ phụ nữ xã	Duyên
21	3	Kiểm Thị Lâm Viên	Phó chủ tịch UBND xã	Zalen
22	4	Tại Thị Thanh Khâm	Chủ tịch thôn Thuận Tín	Khâm
23	5	Đào Thị Bích Vân	Tổ trưởng 2	Vân
24	6	Huyền Thị Dung	Hoa Thủy	Nga
25	7	Trần Thị Nguyễn	Tổ trưởng 1	Nguyễn
26	8	Châu Thị Thu Trang	Thảo Tín	Trang
27	9	Quản Thị Kim Hương	Thảo Tín	Hương
28	10	Phạm Thị Vân	Hội trưởng thôn Thuận Tín	Vân
29				
30				
31				
32				
33				
34				
35				



## ANNEX 3: MINUTES OF PUBLIC CONSULTATION

**SOCIALIST REPUBLIC OF VIETNAM**  
**Independence - Freedom - Happiness**  
**INTEGRATED RURAL DEVELOPMENT SECTOR PROJECT IN CENTRAL PROVINCES -**  
**ADDITIONAL FINANCING**  
**COMMUNITY CONSULTATION MINUTES**  
**Of Safeguard Policies on Environment, Resettlement, Gender and Ethnic Minorities**

-----

16 May 2017

**Name of sub-project:** Infrastructure Development for Vegetable Production  
In An Hai commune, Ninh Hai district, Ninh Thuan province

### 11. I. Participants

- |   |   |
|---|---|
| - Mr. Bui The Ly  | Position: Vice president of An Hai CPC                                    |
| - Mr. Tu Van Hay  | Position: Vice president of Vietnamese Fatherland Front of An Hai commune |
| - Ms. Hoang Thi Van   | Position: Safeguard staff - CPMU  |
| - Mr. Tran Ba Luat  | Position: Safeguard staff - Ninh Thuan PPMU                               |
| - Ms. Do Thi Nham   | Position: Environmental specialist - LIC                                  |
| - Mr. Nguyen Vinh Phu   | Position: Resettlement specialist - LIC                                   |
| - Ms. Le Thi Mong Phuong  | Position: Gender and Social specialist - LIC                              |
| - Ms. Vuong Thanh Huong   | Position: Training specialist - LIC                                       |
| - Mr. Nguyen Dang Xoan  | Position: O&M specialist - LIC  |
| - Representatives of affected/beneficiary households: .... persons (including ..... female, ..... male participants). | (See attached participant list)   |

### 12. II. Contents

#### 12.1 2.1. Propagandized contents:

- Providing project information on sub-project location, scale, items and basic technical data
- Safeguard policies of the Project, including policies on environment, resettlement and ethnic minority development plan, and gender action plan

#### 12.2 2.2. Community consultation

- Consulting on the issues of community's monitoring and participation of preparation, implementation, operation phases of the sub-project, gender and gender mainstreaming, vulnerable groups, severely affected households, etc.
- Consulting on the issues of environment, potential environmental impacts of the Project, including impacts on natural and social environment of the project area, and mitigation measures for negative impacts.
- Consulting on the issues of resettlement, rights of affected persons, maximum mitigation measures to have the least impacts on affected persons.
- Consulting on training requirement of affected and beneficiary households.

## **Initial Environmental Examination (IEE)**

*An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project*

- Consulting on the requirement of suitable assistance and life recovery measures, resettlement compensation for affected people.

### **12.3 III. Discussion opinions**

- a. Environment
  - The people totally agreed with the project implementation as the Project brings the benefits for agricultural production.
  - The Project should be implemented soon to avoid affecting people's production, especially AHs, when building tanks and installing water pipes.
  - The contractor should carry out mitigation measures to avoid dust and water pollution to ensure traffic safety and avoid bad impacts on people's production activities.
  - After finishing building tanks and installing water pipes, the original status of the area must be recovered. Construction wastes must be cleaned and disposed at waste dumps approved by the CPC.
  - The contractor was required to spray water during construction to avoid dust, especially when transporting materials accross residential areas.
- b. Resettlement
  - The people agreed with the project implementation and would comply with its resettlement policy.
  - New seedlings should be supplied to affected households to improve crop yields on the remaining land area after land acquisition so that they can recover their life.
- c. Gender and community participation
  - Community Supervision Boards (CSB) should be established at villages to monitor the project implementation in the localities. More representatives of women's unions should be mobilized to take part in the CSBs to achieve the target of women's participation as required.
  - The PPMU was requested to consider paying remuneration for CSB members.
  - Organizations committed to let the Project borrow their land to install pipes accross their areas.
  - The contractor was requested to reinstate the plan when installing pipes and reinstate road to the local people.
- d. Training
  - Techniques of growing asparagus, garlic and other short-term crops should be improved.

The stakeholders agreed and ended the meeting at 16:00 on 16 May 2017.

**PPMU Representative**

(signed)  
Tran Ba Luat

**CPC Representative**

(signed)  
Bui The Ly

**Community representative**

(signed)  
Tu Van Hay

**Consultant group representative**

(signed)  
Le Thi Mong Phuong

**Initial Environmental Examination (IEE)**

*An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project*

**LIST OF PARTICIPANTS**

(Community consultation meeting on Safeguard policies on Resettlement and Ethnic Minorities)  
(Attached to the meeting minutes dated 16 May 2017 in An Hai CPC office, Ninh Phuoc district,  
Ninh Thuan province)

Name of sub-project: Infrastructure Development for Vegetable Production  
in An Hai commune, Ninh Hai district, Ninh Thuan province

<b>No.</b>	<b>Full name</b>	<b>Gender</b>	<b>Position/ Address</b>	<b>Signature</b>
1	Tu Van Hay	Male	Vice president of VFF - An Hai commune	signed
2	Ho Minh Tuyen	Male	Head of Nam Cuong village	signed
3	Vo Van Tinh	Male	Elder Association branch at Hoa Thanh village	signed
4	Bui The Ly	Male	CPC Vice president	signed
5	Nguyen Van Hong	Male	Nam Cuong village	signed
6	Bao Cho	Male	Tuan Tu village	signed
7	Phan Ca	Male	Hoa Thanh village	signed
8	Nguyen Dinh Thanh	Male	Hoa Thanh village	signed
9	Tran Van Cu	Male	Hoa Thanh village	signed
10	Nguyen Van Qua	Male	Nam Cuong village	signed
11	Huynh Thi Le	Female	Hoa Thanh village	signed
12	Nguyen Ngoc Thanh	Male	Long Binh village	signed
13	Do Thi Chinh	Female	Hoa Thanh village	signed
14	Truong Thi Mai Dung	Female	Women's Union Chairperson of the commune	signed
15	Le Thi Xuan	Female	Nam Cuong village	signed
16	Nguyen Thi Giac	Female	Nam Cuong village	signed
17	Do Van Loi	Male	Tuan Tu village	signed
18	Hua Van Bay	Male	Tuan Tu village	signed
19	Ngu Van Huynh	Male	Tuan Tu village	signed
20	Tu Cong Toan	Male	Tuan Tu village	signed

**Initial Environmental Examination (IEE)**

*An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project*

**AN HAI COMMUNE WOMEN'S UNION  
STANDING COMMITTEE**

**SOCIALIST REPUBLIC OF VIETNAM  
Independence - Freedom - Happiness**

**PARTICIPANT LIST**  
OF COMMUNITY CONSULTATION MEETING ON INFRASTRUCTURE DEVELOPMENT FOR  
VEGETABLE PRODUCTION SUB-PROJECT

No.	Full name	Address	Ethnic group	Location
1	Chau Thi An	Tuan Tu village	Cham	An Hai commune, Ninh Phuoc district, Ninh Thuan province
2	Kieu Thi Bich Tram	Tuan Tu village	Cham	
3	Chau Thi Anh Nieu	Tuan Tu village	Cham	
4	Chau Thi May	Tuan Tu village	Cham	
5	Chau Thi Hieu	Tuan Tu village	Cham	
6	Kieu Thi Chung	Tuan Tu village	Cham	
7	Kieu Thi Thuyen	Tuan Tu village	Cham	
8	Chau Thi Kim Thoa	Tuan Tu village	Cham	
9	Chau Thi Anh Thu	Tuan Tu village	Cham	
10	Kieu Thi Ny	Tuan Tu village	Cham	
11	Kieu Thi Thuy Van	Tuan Tu village	Cham	
12	Chau Thi Yen	Tuan Tu village	Cham	
13	Kieu Thi Cuong	Tuan Tu village	Cham	
14	Kieu Thi Kim Van	Tuan Tu village	Cham	
15	Dao Thi Ni	Tuan Tu village	Cham	
16	Tai Thi Kim Thoa	Tuan Tu village	Cham	
17	Kieu Thi Hoa	Tuan Tu village	Cham	
18	Ninh Thi Kim Cuong	Tuan Tu village	Cham	
19	Kieu Thi Ot	Tuan Tu village	Cham	

*An Hai, 16 May 2017*

**On behalf of An Hai Commune Women's Union  
President**

(signed)

**Truong Thi Mai Dung**

16 May 2017

### 13. I. Participants

- ## 14. II. Contents

- Providing project information on sub-project location, scale, items and basic technical data
- Safeguard policies of the Project, including policies on environment, resettlement and ethnic minority development plan, and gender action plan

- Consulting on the issues of community's monitoring and participation of preparation, implementation, operation phases of the sub-project, gender and gender mainstreaming, vulnerable groups, severely affected households, etc.
- Consulting on the issues of environment, potential environmental impacts of the Project, including impacts on natural and social environment of the project area, and mitigation measures for negative impacts.
- Consulting on the issues of resettlement, rights of affected persons, maximum mitigation measures to have the least impacts on affected persons.
- Consulting on training requirement of affected and beneficiary households.
- Consulting on the requirement of suitable assistance and life recovery measures, resettlement compensation for affected people.

a. Environment

- The project was agreed to implement and supported by the people as there is lack of water for agricultural production in the project area.

**Initial Environmental Examination (IEE)**

*An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province  
Integrated Rural Development in Central Provinces Project*

- The irrigation area was expected to be expanded to facilitate crop production in Phuoc Hai commune.
- The contractor should carry out mitigation measures to avoid dust and water pollution to Lu river during the construction.
- During the construction, water drainage should be ensured to avoid flood of partial area.
- There are a few people living in the project headworks area, so the impacts on environment are insignificant.
- The contractor should have construction schedule and construction site signal ensuring traffic safety to the local people.
- b. Resettlement
  - The people agreed to support the project implementation and would comply with its resettlement policy.
  - The project was recommended to be implemented soon to stabilize the affected households' life and production.
- c. Gender and community participation
  - The Women's Union asked to take part in training course of asparagus growing technique.
  - The Project should encourage women and ethnic people to take part in the project activities, including community supervision boards.
  - It should be considered that households in Tu Tam 1 village can get the same benefit from the project as those in An Hai commune.
- d. Training
  - The agriculture extension centre has organized some training courses on cultivation and husbandry within the project framework. But it was recommended that some more training courses on safe vegetable and agriculture product management by topic should be added to ensure outputs for the local farmers.

The stakeholders agreed and ended the meeting at 10:00 on 16 May 2017.

**PPMU Representative**

(signed)  
Tran Ba Luat

**CPC Representative**

(signed)  
Huynh Thanh Huy Thai

**Community representative**

(signed)  
Dao Van Manh

**Consultant group representative**

(signed)  
Do Thi Nham

## **LIST OF PARTICIPANTS**

(Community consultation meeting on Safeguard policies on Resettlement and Ethnic Minorities)

*(Attached to the meeting minutes dated 16 May 2017 in Phuoc Hai CPC meeting office, Ninh Phuoc district, Ninh Thuan province)*

Name of sub-project: Infrastructure Development for Vegetable Production  
In Phuoc Hai commune, Ninh Hai district, Ninh Thuan province

<b>No.</b>	<b>Full name</b>	<b>Gender</b>	<b>Position/ Address</b>	<b>Signature</b>
1	Phan Van Huong	Male	Farmer	signed
2	Le Van Buu	Male	An Hai commune police	signed
3	Le Van Trinh	Male	An Hai commune - Farmer	signed
4	Nguyen Ngoc Trung	Male	Phuoc Hai commune - Farmer	signed
5	Le Thi Phao	Female	Phuoc Hai commune	signed
6	Le Van Du	Male	Tu Tam 1 village, Phuoc Hai commune	signed
7	Le Van Mo	Male	Tu Tam 1 village, Phuoc Hai commune	signed
8	Ha Mai Anh	Male	Tu Tam 1 village	signed
9	Nguyen Ngoc Anh	Male	Tu Tam 1 village	signed
10	Nguyen Van Teo	Male	Tu Tam 1 village	signed
11	Pham Van Nho	Male	Tu Tam 1 village	signed
12	Nguyen Huu Luong	Male	Farmers' Associate president	signed
13	Dao Van Manh	Male	VFF president	signed
14	Pham Le Qui	Male	Commune Land Management Officer	signed
15	Kieu Thi Lam Vien	Female	Women's Union vice president	signed
16	Huynh Thanh Huy Thai	Male	CPC vice president	signed
17	Le Thi Lien	Female	Tu Tam 1 village	signed
18	Le Thi Minh Tam	Female	Tu Tam 1 village	signed



**Initial Environmental Examination (IEE)**

*An Hai Commune 's safety vegetable production infrastructure development subproject- Ninh Phuoc District Ninh Thuan Province*

*Integrated Rural Development in Central Provinces Project*

**LIST OF PARTICIPANTS FROM PHUOC HAI COMMUNE, NINH HAI DISTRICT**

1	Phan Thi My Phuong			Women's Union president	signed
2	Dao Thi My Diem			Women's Union Standing committee member	signed
3	Kieu Thi Lam Vien			Women's Union vice president	signed
4	Tai Thi Thanh Khoa			Thanh Tin village WU branch	signed
5	Dao Thi Bich Van			Tu Tam 2 village	signed
6	Huynh Thi Dang			Hoa Thuy village	signed
7	Tran Thi Nguon			Tu Tam 1 village	signed
8	Chau Thi Thoang			Thanh Tin village	signed
9	Chau Thi Kim Huyen			Thanh Tin village	signed
10	Pham Thi Van			Thanh Tin village - household with acquired land	signed

**ANNEX 4: MONITORED RESULTS OF SURFACE WATER QUALITY****Surface water quality in the subproject area in 12<sup>st</sup> December 2016**

No	Parameters	Unit	Results			QCVN 08-MT:2015 (B1)
			NM-TT01	NM-TT02	NM-TT03	
1.	Temperature	°C	25,3	25,2	25,4	-
2.	pH		7,0	7,3	7,1	5,5 - 9
3.	DO	mg/l	6,0	6,3	5,1	≥4
4.	COD	mg/l	14,4	20,2	<b>37,4</b>	30
5.	BOD <sub>5</sub>	mg/l	6,1	13,6	<b>15,3</b>	15
6.	TSS	mg/l	<b>104</b>	<b>92</b>	21	50
7.	NH <sub>4</sub> <sup>+</sup>	mg/l-N	0,13	0,16	0,15	0,9
8.	Coliform	MPN/100ml	<b>110.000</b>	<b>24.000</b>	<b>9.300</b>	7.500

Source : Center of Environmental Monitoring and Analysis of Ninh Thuan DONRE , December 2016

- *Note : QCVN 08-MT:2015/BTNMT: National technical regulation on surface water quality, Values in the column B1 are applied to the surface water using for irrigation purpose or other purposes that water quality requirement are similar or using purpose as same as class B2*
- *Sampling location*
  - ❖ *NM-TT01: Water from 30 m upstream of Tuan Tu weir on Lu river (Co-ordinate VN2000): X:1275192; Y:579630.*
  - ❖ *NM-TT02: Water from 30 m downstream of Tuan Tu weir on Lu river ( Co-ordinate VN2000): X:1275241; Y:579730.*
  - ❖ *NM-TT03: Water from the lake in Hoa Thnh ( Co-ordinate VN2000): X:1274720; Y:581730.*

## ANNEX 4: MINUTES OF DISPOSAL SITES

### CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

### BIÊN BẢN

### XÁC ĐỊNH VỊ TRÍ BÃI ĐỔ ĐẤT THẢI TRONG QUÁ TRÌNH THI CÔNG XÂY DỰNG

**TÊN CÔNG TRÌNH:** Xây dựng hạ tầng phục vụ vùng sản xuất rau an toàn tập trung  
xã An Hải, huyện Ninh Phước, tỉnh Ninh Thuận.

**ĐỊA ĐIỂM:** Xã An Hải và xã Phước Hải, huyện Ninh Phước, tỉnh Ninh Thuận.

**GIẢI ĐOẠN THIẾT KẾ:** Lập thiết kế BVTC – Tổng dự toán.

Hôm nay, vào lúc 08 giờ 30 phút, ngày 25 tháng 03 năm 2017, tại công trình Xây dựng hạ tầng phục vụ vùng sản xuất rau an toàn tập trung xã An Hải, huyện Ninh Phước, tỉnh Ninh Thuận chúng tôi gồm có:

#### I. THÀNH PHẦN THAM GIA:

**1. Ban quản lý dự án Phát triển nông thôn tổng hợp các tỉnh miền Trung – Khoản vay bổ sung tỉnh Ninh Thuận.**

- Ông: Lê Xuân Toàn

- Chức vụ: Phó giám đốc BQL DA

- Ông: Trần Bá Luật

- Chức vụ: Cán bộ BQL DA

**2. Ủy ban nhân dân xã An Hải**

- Ông: Bùi Thế Ly

- Chức vụ: Phó Chủ tịch UBND xã

- Ông: Ngô Huỳnh Quang

- Chức vụ: Cán bộ địa chính xã

**3. Ủy ban nhân dân xã Phước Hải**

- Ông: Huỳnh Thanh Huy Thái

- Chức vụ: Phó Chủ tịch UBND xã

- Ông: Phạm Lê Quý

- Chức vụ: Cán bộ địa chính xã

**4. Nhà thầu tư vấn thiết kế: Viện Nước, Tưới tiêu và Môi trường**

- Ông: Lê Xuân Quang

- Chức vụ: Phó Viện trưởng

- Ông: Phạm Văn Đông

- Chức vụ: Phó giám đốc Trung tâm

#### II. NỘI DUNG THỰC HIỆN:

Căn cứ quyết định số 3210/QĐ-UBND ngày 26/12/2016 của Chủ tịch Ủy ban nhân dân tỉnh Ninh Thuận về việc phê duyệt dự án đầu tư xây dựng công trình của Dự án thành phần: Xây dựng hạ tầng phục vụ vùng sản xuất rau an toàn tập trung xã An Hải, huyện Ninh Phước, tỉnh Ninh Thuận thuộc Dự án Phát triển nông thôn tổng hợp các tỉnh miền Trung – Khoản vay bổ sung;

Căn cứ hợp đồng tư vấn số: 08/2017/HDTV ký ngày 15 tháng 3 năm 2017 về việc Tư vấn Khảo sát, lập bản vẽ thi công – Tổng dự toán của Dự án thành phần: Xây dựng hạ tầng phục vụ sản xuất rau an toàn tập trung xã An Hải, huyện Ninh Phước,

tỉnh Ninh Thuận giữa Ban quản lý dự án Phát triển nông thôn tổng hợp các tỉnh miền Trung – Khoản vay bổ sung tỉnh Ninh Thuận và Viện Nước, Tưới tiêu và Môi trường.

Chúng tôi cùng nhau kiểm tra hiện trường để xác định vị trí đổ thải trong quá trình thi công xây dựng công trình;

Theo số liệu tính toán của Đơn vị tư vấn thiết kế là Viện nước, Tưới tiêu và Môi trường về Khối lượng đào, đắp như sau:

- Khối lượng đất đào: 47.494 m<sup>3</sup>

- Khối lượng đất đắp: 37.195 m<sup>3</sup>

- Phần khối lượng đất đào còn lại là: 10.299 m<sup>3</sup> sẽ được bố trí đổ ra bãi thải với các vị trí đã được Địa phương đồng ý, thống nhất cụ thể như sau:

**1. Khu công trình đầu mối:**

\* **Vị trí bãi thải 1:** cách công trình xây dựng 1 km với trữ lượng chứa là: 6.500m<sup>3</sup>. Đất này thuộc Ủy ban nhân dân xã Phước Hải quản lý. (tại Thôn Tả Tâm)

**2. Thi công 15 bể chứa và tuyến ống: có 02 vị trí đổ thải**

\* **Vị trí bãi thải 2:** cách công trình xây dựng trung bình 3,5 km với trữ lượng chứa là: 1.500m<sup>3</sup>. Đất này thuộc Ủy ban nhân dân xã An Hải quản lý. (tại Thôn An Thạnh 1)

\* **Vị trí bãi thải 3:** cách công trình xây dựng trung bình 1km với trữ lượng chứa là: 3.000m<sup>3</sup>. Đất này thuộc Ủy ban nhân dân xã An Hải quản lý. (tại Thôn Nam Cường)

Ngoài 03 vị trí đã xác định còn có một số hộ dân xung quanh đề nghị xin đất thải để dôn nền nhà, cải tạo ruộng vườn..

**III. KẾT LUẬN:** - Với nội dung thống nhất như trên, đơn vị tư vấn thiết kế dùng làm căn cứ để triển khai các công việc tiếp theo.

- Đề nghị chính quyền địa phương theo dõi, giám sát và tạo điều kiện cho đơn vị tư vấn cũng như đơn vị thi công thực hiện nhiệm vụ.

Biên bản đã được các thành phần tham dự thống nhất và ký tên làm cơ sở cho các bên thực hiện./.

ĐẠI DIỆN  
BAN QUẢN LÝ DỰ ÁN  
KT. CHẤM ĐỐC  
PHÓ GIÁM ĐỐC

Lê Xuân Toàn

ĐẠI DIỆN  
ĐƠN VỊ TƯ VẤN THIẾT KẾ

ĐẠI DIỆN  
UBND XÃ AN HẢI  
KT. CHỦ TỊCH  
PHÓ CHỦ TỊCH  
Bùi Thế Ly

ĐẠI DIỆN  
UBND XÃ PHƯỚC HẢI  
KT. CHỦ TỊCH  
P. CHỦ TỊCH  
Nguyễn Thanh Huyền

## **ANNEX 4 Minutes of the Determination of Disposal Sites**

**PROJECT:** Infrastructure Development for Vegetable Production in An Hai commune, Ninh Phuoc district, Ninh Thuan Province.

**LOCATION:** An Hai commune, Ninh Phuoc district, Ninh Thuan Province.

**PHASE:** Detailed design – Total cost estimate

In this moment, today, at 8:30 am on 25th March 2017 at construction site of Infrastructure Development for Vegetable Production sub-project in An Hai commune, Ninh Phuoc district, Ninh Thuan Province, all relevant stakeholders present the following participation:

### **I. PARTICIPATING STAKEHOLDERS**

#### **1. Ninh Thuan Provincial Project Management Unit:**

- Mr. Le Xuan Toan – Deputy director of the PPMU
- Mr. Tran Ba Luat – PPMU staff

#### **2. An Hai Commune People's Committee**

- Mr. Bui The Ly – Deputy president of CPC
- Mr. Ngo Huynh Quang – Land Management Officer

#### **3. Phuoc Hai Commune People's Committee**

- Mr. Huynh Thanh Huy Thai - Deputy chairman of CPC
- Mr. Pham Le Qui – Land Management Officer

#### **4. Design consultant: Institute of Water, Irrigation and Environment**

- Mr. Le Xuan Quang – Deputy Head of The Institute
- Mr. Pham Van Dong – Centre Vice Director

### **II. CONTENT OF IMPLEMENTATION**

Pursuant to Decision no.3 3210/QĐ-UBND dated 26 December 2016 of the President of Ninh Thuan Province People's Committee on the approval of Infrastructure Development for Vegetable Production sub-project in An Hai commune, Ninh Phuoc district, Ninh Thuan province, which is regarded as component of Integrated Rural Development in Central Provinces - Additional financing project.

Pursuant to consulting contract no. 08/2017/HDTV dated 15 March 2017 on Surveying and preparing detailed design and total cost estimate for Infrastructure Development for Vegetable Production sub-project in An Hai commune, Ninh Phuoc district, Ninh Thuan province between Ninh Thuan PPMU and the Institute of Water, Irrigation and Environment.

We together inspected the construction site in order to determine the exact location of disposal site during the construction period;

According to design consultant's calculation (the Institute of Water, Irrigation and Environment), the volume of earth excavation and compaction shall be:

- Excavated soil volume: **47,494 m<sup>3</sup>**

- Embankment soil volume: **37,195 m3**
- The remaining volume of **10,299 m3** shall be allocated to be disposed at disposal sites where the local authority grants permission. Detail are as the following:

**1. Headworks structure. (1 disposal site)**

- **Disposal site No.1:** is located 1km away from construction site with total capacity calculated to be up to 6,500m3. This area is under the management of Phuoc Hai Commune People's Committee ( Tu Tam village).

**2. Installation of 15 tanks and pipe. (2 disposal sites)**

- **Disposal site No.2:** is located 3.5 km away from construction site with total capacity calculated to be 1,500m3. This area is under the management of An Hai Commune People's Committee ( An Thanh 1 village).
- **Disposal site No.3:** is located 1.0 km away from construction site with total capacity calculated to be 3,000m3. This area is under the management of An Hai Commune People's Committee ( Nam Cuong village).

In addition to the three determined sites, some households have asked for disposal land to elevate their house foundation and improve garden and fields.

**III. CONCLUSION.**

As consensus has been achieved above, design consultant shall follow-up the outcomes and use it as background for upcoming activities.

- Local authority is highly recommended to timely monitor, supervise and facilitate project activities implemented by the design consultant and the contractor at site.

The minute shall come into binding-force at the date of signing.

**On behalf of PPMU**

(signed)

**Le Xuan Toan**

**On behalf of An Hai CPC**

(signed)

**Bui The Ly**

**On behalf of Design Consultant**

**On behalf of Phuoc Hai CPC**

(signed)

**Nguyen Thanh Huy Thai**

**ANNEX 5: ENVIRONMENTAL REQUIREMENT IN THE BIDDING DOCUMENT**

No	Impacts	Mitigation measures	Location
1	Erosion or sedimentation caused by during clearing or earthworks	<ul style="list-style-type: none"> <li>- Excavation works need to be scheduled to exclude rainy season (from September to the end of November ) as much as possible;</li> <li>- Split construction section by section to reduce the concentration of materials and extent of excavation and embankment;</li> <li>- Material storage areas need to be bounded and covered during rainy times;</li> <li>- Stabilize all slopes, embankments, and other erosion-prone working areas while works are proceeding at borrow pit and disposal areas ;</li> <li>- Re-plant vegetation covering upper parts of slope sections of roads and of dam slopes as soon as feasible after excavation and embankment works are achieved;</li> <li>- The exploitation of borrow pits needs to avoid rainy days that may cause land sliding</li> <li>- The exploitation of borrow pits needs to be dug in subsequent sections to better control verticality of digging areas;</li> <li>- Not allow any heavy machinery or other equipment to be located on the top of digging areas to avoid possible landslides;</li> </ul>	In slope areas of upgraded reservoir, spillways, and siltation tank , 15 water tanks of Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;
2	Polluted soil due to leakage of oil and other chemical substances	<ul style="list-style-type: none"> <li>- Discarded lubricant and other chemicals have to be kept in dry covered area;</li> <li>- Discarded lubricants and chemicals from construction sites need to be collected, transported and treated according to the Circular No. 36/2015-BTNMT of MONRE;</li> <li>- Construction waste needs to be transported by adequate means to agreed disposal area in 3 agreed disposal sites of An Hai and Phuoc Hai communes;</li> <li>- Provide dustbins at work sites to manage wastewater and domestic waste from workers at 03 camp sites;</li> <li>- Disposal of solid wastes into reservoir, Lu river, other water sources, agricultural fields shall be prohibited through notices in signboards at sites and be enforced by daily patrols by contractors' personnel in all sites;</li> <li>- Contractors must prepare a place to clean/wash tools/vehicles. Washing trucks/ vehicles next to the water bodies,</li> </ul>	Tuan Tu reservoir, Lu river, existing canal (in upstream of Tuan Tu weir) and other water surfaces



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		<p>existing rivers, streams, canals and reservoirs such as Tuan Tu weir's reservoir, Lu river will not be permitted;</p> <ul style="list-style-type: none"> <li>- Locations of 3 worker camps need to be apart from Tuan Tu reservoir, Lu river as well as existing canal (in upstream of Tuan Tu weir) to avoid water contaminations from domestic waste;</li> <li>- Covering material storage areas is needed when raining. Temporary storage of constructional and domestic waste on the sites should not to last more than 24 hours.</li> </ul>	
3	Noise and vibration caused by machines & vehicles	<ul style="list-style-type: none"> <li>- Construction vehicles, machines and equipment need to meet standards related to noise and vibration as regulated by the Government. The Contractor needs to submit the official documentation proving that all construction vehicles, equipment, and machines are checked and meet requirements concerning noise and vibration generated of the current Vietnam standards;</li> <li>- Ensure all construction vehicles and equipment are well maintained. Turn off engines of machines and/or equipment (when possible) to avoid accumulated noise and vibration impacts on workers;</li> <li>- All noise and vibration generating activities shall be avoided during resting time of local people (12-13h and 20h to 6h) at Tuan Tu reservoir, pumping stations, along the installed pipelines and other works;</li> <li>- Provide ears' protective equipment for workers working in high noise conditions generated by machinery and/or equipment, and allow for reasonable time-off from work when they are exposed to excessively long periods to noise and vibrations, as regulated in Decision 3733/2002 of Ministry of Health</li> <li>- Detailed construction schedule needs to be publicly announced to local people so that activities can be scheduled to reduce noise and vibration.</li> </ul>	Residential areas in constructed works and transportation routes of An Hai and Phuoc Hai communes
4	Air pollution caused by machines and vehicles (dust and gas emissions)	<ul style="list-style-type: none"> <li>- Covering trucks and transportation vehicles to minimize dust generated when transporting materials and wastes;</li> <li>- The use of construction materials need to be properly planned to limit as much as possible the volume of quantities stored on the sites;</li> </ul>	All sub-project construction sites, 3 disposal sites and 3 camp sites in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;

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		<ul style="list-style-type: none"> <li>- Watering practices to minimize dust generation need to be implemented for roads and working sites that are close to residential areas, such as Tuan Tu , Nam Cuong, Hoa Thanh Villages in An Hai Commune</li> <li>- Equipment/vehicles have to be verified and licensed. In addition, it is mandatory to have regular maintenance to ensure that emitted gases are under the established thresholds;</li> <li>- Equipment and machines will not be allowed to move outside of construction sites to ensure control of emission sources;</li> <li>- All material/waste storages shall be located away from any households and sensitive areas.</li> </ul>	
5	Solid waste and hazardous waste generation	<ul style="list-style-type: none"> <li>- Generated solid waste has to be regularly removed to the 3 disposal sites agreed with local people of An Phuoc (1 site), An Hai (2 sites) communes;</li> <li>- In case that local people ask excavated soil for their house, the agreement on the issue between local households, contractors and local authorities need to be obtained.</li> <li>- The transportation of discarded soil to disposal areas will be managed and implemented following mitigation measures in transportation to reduce air pollution. Trucks will be covered during transporting and be regularly cleaned out of dust;</li> <li>- Equip work sites of 8 dustbins (it is proposed that there will be 2 dustbins tanks provided at each construction site);</li> <li>- Sign a contract to weekly collect solid waste at 3 workers' camps with a local waste collection agency;</li> <li>- Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be strictly prohibited;</li> <li>- Burning of construction and domestic wastes shall be prohibited.</li> </ul>	Three workers' camps, embankment sites in Tuan Tu reservoir, installed pipeline roads , Deo Cau borrow pit; 3 disposal sites and other works in An Hai and An Phuoc communes;
6	Soil contamination	<ul style="list-style-type: none"> <li>- Covering material storage areas and handling chemicals and wastes to ensure that construction materials and/or wastes could not fall into agricultural land such as Asparagus &amp; vegetables fields in the subproject areas;</li> </ul>	Three workers' camps, embankment sites in Tuan Tu reservoir, installed pipeline roads , Deo Cau borrow pit; 3 disposal sites and other works in An Hai and An

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		<ul style="list-style-type: none"> <li>- Discarded lubricant, chemicals must be kept in dry and covered area</li> <li>- Toxic/hazardous waste, if any, need to be collected, transported and treated according to Circular No. 36.2015/BTNMT of MONRE;</li> <li>- Regularly collect solid wastes and transport them to disposal area where had agreed with local authorities/local people of An Hai and Phuoc Hai communes;</li> <li>- Provide dustbins and mobile septic tanks in all construction sites and 03 worker camps;</li> <li>- Wastewater from 03 worker camps needs to be collected and treated by septic tanks before being discarded.</li> </ul>	Phuoc communes;
7	Local flooding	<ul style="list-style-type: none"> <li>- Setting up appropriate construction schedule to avoid rainy season, especially for excavation activities.</li> <li>- Manage storage of materials and/or wastes to avoid them falling into water flowing in existing irrigation canals in upstream of Tuan Tu weir blocking intakes and/or culverts</li> <li>- Regularly checking water flow situation of canals, culverts and removing materials that block water flow;</li> <li>- Placing for washing vehicles and tools next to the rivers, streams and existing canals will not be allowed such as in Tuan Tu reservoir, along Lu river ;</li> </ul>	In residential areas in downstream of Tuan Tu reservoir, Lu river , existing canal in upstream of Tuan Tu weir of An Hai Commune ;
8	Unsafe for travelling and business during the road construction (Traffic safety)	<ul style="list-style-type: none"> <li>- Install traffic signals at construction sites to regulate and minimize speed of vehicles or warning panels of areas under construction, especially at the roads' intersections;</li> <li>- Install lamps at night at construction sites;</li> <li>- Inform the community about construction schedule through informal public consultation or at any local people meetings and display related information on notice boards of An Hai communes;</li> <li>- Construction activities need to be done section by section to minimize temporary acquired areas on install pipeline roads as well as to preserve road function during construction period;</li> <li>- Training for drivers of sub-project as well as workers to work respecting safety rules</li> </ul>	Along installed pipeline roads and on weir crests especially for communities using these facilities in Tuan Tu, Nam Cuong, Hoa Thanh Villages – An Hai Commune ;

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		<ul style="list-style-type: none"> <li>and warning people passing nearby;</li> <li>- Assign at least 01 worker who will monitor, during peak hours, the inflow and outflow of vehicles to and from construction sites as well as warning people to ensure traffic safety;</li> </ul>	
9	Impact on local ecology	<ul style="list-style-type: none"> <li>- Only cut down private trees and agricultural plants that have been taken into account in compensation plans;</li> <li>- Any cut plants and/or damaged fields which are out of the ROW will be compensated according to voluntary agreement;</li> <li>- Re-plant vegetable cover section by section after construction work completed to return landscape to its original condition;</li> </ul>	Areas surrounded the upgraded head work, pumping stations, siltation tank, power-substations in Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune
10	Impacts to existing infrastructure	<ul style="list-style-type: none"> <li>- Work with existing infrastructure owners (electricity, water...) to identify locations of underground components if any; obtain the agreement of local authorities in using transport routes.</li> <li>- Any public facilities damaged during project activities need to be fully repaired and recovered to their original conditions by the contractor; Load capacity of trucks should not exceed local bridges /roads' load design (weight of loaded truck should be lower than the design load of 5 or 10 tons) depending on the designed load of the bridge /road);</li> <li>- After construction completion, all public facilities must be re-checked to ensure their functions have not been affected by sub-project activities, if any damage has been identified besides normal wear and tear, the contractor will be responsible for repairing the damaged structures to their original conditions and compensating for damages that cannot be recovered.</li> </ul>	; All roads' components used by the sub-project area & transportation routes in An Hai and An Phuoc Commune
11	Disturbance to local people's life due to presence of construction workers	<ul style="list-style-type: none"> <li>- Recruitment of workers should prioritize local workers;</li> <li>- Register provisional residence for workers temporary living in the 03 camps;</li> <li>- Contractor needs to regulate camp sanitation system;</li> <li>- Carry out HIV/AIDS and sex transmission infection prevention program;</li> <li>- Propagate and raise awareness of the construction workers to maintain discipline, habits and customs and create good relationships with local people and reduce social evils;</li> </ul>	Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune

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		<ul style="list-style-type: none"> <li>- Contractors need to be encouraged to organize provision of meals for all workers at each site to ensure hygiene and food safety;</li> <li>- Spray insecticides in the 03 workers' camps;</li> <li>- Train and guide labor safety measures and prevention of common diseases for workers.</li> </ul>	
12	Impacts on health of local people and construction workers	<ul style="list-style-type: none"> <li>- Construction contractor needs to register number of labor working for sub-project to local authority;</li> <li>- Regularly testing health of workers against infectious diseases as regulated by Ministry of Labor;</li> <li>- Provide sufficient labor safety equipment to workers such as safety shoes, helmets, harness etc. Instruct workers how to use them continuously to ensure compliance with safety rules;</li> <li>- A first aid kit will be provided at each construction site to ensure that patients can receive first aid timely before transporting them to the medical station/hospital;</li> <li>- Collaborate with commune clinic center to receive additional support;</li> <li>- Install power network at site in accordance with official safety regulations and ensure that the power lines are safe and that the power connections to grid or generators are located at dry and safe places;</li> <li>- Install warning signs at the electric receptacles;</li> <li>- Display information panels on the labor regulations at site;</li> <li>- Install fences, warning signs at the intersection between canals and roads;</li> <li>- Construct temporary drainage ditches to drain water from sites, prevent any possible water logging</li> <li>- Preparing emergency responses (alerts and remedy intervention) for any occurrence during construction such as fire, flooding or other unforeseen events.</li> </ul>	Tuan Tu, Nam Cuong, Hoa Thanh Villages - An Hai Commune as well as other communes along transportation routes of materials; and 3 camps of sub-project;
	Impacts concerning quarries for soil, stone and sand extraction	<ul style="list-style-type: none"> <li>- The soil will be exploited from only Deo Cau borrow pit in Nhon Son Commune – Ninh Son District , which are to the construction about 12-15 km</li> </ul>	Areas of Deo Cau borrow pits are in Nhon Son Commune-Ninh Son District

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13		<ul style="list-style-type: none"> <li>- During soil excavation, mitigation measures to environment needs to be implemented:</li> <li>+ Exploit section by section to avoid excessive dust generation and landslides and prepare recovery plan for exploited areas.</li> <li>+ Workers in quarries have to have PPEs and should follow proper safety guidelines. Vehicles need to be covered to avoid dust &amp; solid waste dropping on the roads.</li> <li>+ Night-time transportation need to be minimized to avoid traffic accidents possibly due to poor night-time visibility;</li> <li>- Stone and sand will be purchased from Phan Rang City, which is 5-10 km away to the sites. Construction contractor needs to check license and environmental mitigation measures of such quarry;</li> </ul>	
14	Cultural objects or graves found	<ul style="list-style-type: none"> <li>- If any cultural object and/or grave is found during construction phase, the construction activities at those places need to be temporarily stopped and local authorities should be immediately informed to deal with the issue;</li> <li>- Propose form of compensation need to be undertaken after consultation with households (if graves) suffering impact and the construction contractor should provide the needed support to resettle graves elsewhere or to communes for cultural objects found;</li> </ul>	Construction areas, Deo Cau borrow pit, disposal sites in An Hai and Phuoc Hai communes
15	Environmental recovery activities	<ul style="list-style-type: none"> <li>- During construction, any damage to local infrastructures will be compensated and mitigated by construction contractor as mentioned above;</li> <li>- The environmental issues emerged during recovery activities such as noise, dust, gases, solid waste, hazardous waste, water pollution etc. will be handled with similar measures indicated in related sections above;</li> <li>- Planting trees after completing construction activities.</li> <li>- Repairing damaged infrastructures as soon as possible;</li> <li>- Restore the landscape in and around borrow pit to avoid landslides after exploitation completed</li> </ul>	Surrounding areas of Tuan Tu weir, Siltation tank, pumping stations, along install pipeline roads as well as Deo Cau borrow pit of sub-project in Nhon Son -Ninh Son District ;