

Updated Environmental Management Plan

April 2018

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

SUBPROJECT: LINING NORTHERN BA BAU MAIN CANALS
OF BA BAU RESERVOIR IRRIGATION SYSTEM, BINH
THUAN PROVINCE

**Additional canal section from Suoi Thi reservoir's intake
K0+25,7m ÷ K6+880,04m**

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

WEIGHTS AND MEASURES

km	–	Kilometer
kg	–	Kilogram
ha	–	Hectare
m	–	Meter

NOTE

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

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1. INTRODUCTION

Binh Thuan Province was allocated fund for four sub-projects, including "Upgrading North primary canal of Ba Bau irrigation system", in accordance with the Decision No 4881/QĐ-BNN-KH dated 10/11/2014 issued by MARD on the approval of the master plan of the ADB Loan 3173-SF to the "Integrated Rural Development Sector Project in Central Provinces- additional financing".

At the moment, all four mentioned sub-projects have been approved and implementation in construction phase. The three subprojects : Ba Bau , Quao river, Du irrigation canal system upgrading have completed construction phase and started operating to serve irrigation water supply for agricultural production. In order to improve the fund efficiency and improve the irrigation system's services, Binh Thuan PPMU has requested to use the surplus budget for an additional extended section of Bac Ba Bau main canal's upgrade to maintain irrigation's sustainability, integration and facilitate the operation and maintenance as compare to Document No.8639/BNN-XD dated 21/10/2015.

This Updated Environmental Management Plan (uEMP) is prepared to address the environment mitigation measures required and the monitoring plan necessary for the subproject's additional extended section of North primary canal of Ba Bau irrigation system. The updated EMP is based on the original EMP/IEE, includes additional mitigation measures with affected locations to mitigate dust and surface water pollution and to ensure safety of both local people and workers during construction stage. The uEMP shall form part of the Bid Document for Tendering of the sub-project.

2. PROJECT DESCRIPTION

The Subproject "Upgrading North primary canal of Ba Bau irrigation system - The additional extended section" shall complete the whole scheme of Bac Ba Bau canal; The scheme guarantees stable, sustainable and self-irrigating scheme for 1,450 ha of cultivation land contributing to the overall 85% of irrigating sufficiency. In particular, cultivation area of Dragon fruit increases up to 280ha as compare to the project phase2. The additional section's primary functions are:

- To irrigate the total of 575,5 ha (In which: it directly irrigates 325,5 ha of cultivated area and supplements water to Cam Hang reservoir)
- To provide water for 120,000 person (Supplementing water to Cam Hang reservoir to additionally irrigate the city of Phan Thiet)

Scale of the additional works:

❖ **Canal:**

The expanded dredging section starts from the existing inlet of Suoi Thi reservoir, from K0+25.7m to K2+500m, with total length of $L = 2,474.3$ m. The canal has trapezoid section with dimensions of $B \times H = (6.0 \times 3.5)$ m, slope coefficient $m = 1.0$.

The strengthened section is from K2+500m to K6+880.04m (end point) with total length of $L = 4,380.04$ m. The canal cross section dimension is $B = 6.0$ m, the height of strengthened wall is $H_{gc} = 1.5$ m, the wall is of gravity-based structure.

Total length of canals to be upgraded is 6,854 m

❖ **There are 12 structures on the canal, including the following:**

- Inlets: 04 inlets
- Regulator cum bridge: 01 regulator
- Offtake regulator: 01 regulator
- Bridge across the canal: 01 bridge
- Primitive bridge: 04 bridges
- Outlet cum bridge: 01 outlet.

Through site visits, the sensitive areas only residential areas in Ham Thanh and Ham Hiep commune but these residential areas located thinly along additional canal section. Nearest distance is about 50 – 90 meters. There are no schools, health stations, temples or cultural heritage along this additional canal section

Table 1. General information of Additional Works

DATA ITEM	SUBPROJECT DATA
GENERAL INFORMATION	
Subproject Name	Lining North Ba Bau canals of Ba Bau Reservoir irrigation system Subproject, Ham Thuan Bac District; additional canal section from Suoi Thi reservoir's intake K0+25,7m ÷ K6+880,04m
Subproject Type	Irrigation
Project owner	Department of Agriculture and Rural Development, Binh Thuan Province
Address of Project owner	17 Thu Khoa Huan Road, Phan Thiet City, Binh Thuan Province
Name and Title of Head of Project owner	Nguyễn Hữu Phước Title: Director
Telephone, fax and email details of Project owner	0918.157.801, huuphuoctln@yahoo.com.vn
Name of Environmental Officer of PPMU	Nguyen Hong Truong
Telephone, fax and email details of PPMU Environmental Officer	0917230379 hongtruongqlda@gmail.com
SUBPROJECT DESCRIPTION	
New project or rehabilitation project	Lining and Upgrading
Technical standard for irrigation canal	The irrigation scheme is of grade IV according to QCVN04-05:2012/BNNPTNT standard.
Design Irrigation Frequency	P = 85%
Surface and underground water	Surface water
Identification of water source	Ba Bau Reservoir.
Water source used for living or not?	Yes. The main canal is upgraded for irrigation purpose and supplementing water for Cam Hang reservoir to aim supplemental domestic water supply for Phan Thiet City
Area to be irrigated	1450 ha (existing work) + 325.5 ha (added work)
Purpose of Northern Ba Bau Main Canal Lining and Upgrading	Added lining canal section will be ensured to irrigate 325.5 ha of cultivated land in Ham Thanh commune –Ham Thuan Nam District and supplementing irrigation for Cam Hang Reservoir to extend 250 ha of cultivated land (mostly dragoon fruit land), supply water for rivers, streams in the subproject area in dry season to breed cattle and poultry in downstream
Length of upgraded canal	Total length of canals to be upgraded is 6,854 m
The width and depth of upgrading canal	Cross surface is trapezium with dimension of W x H = 6.0m x 3.5 m, slope coefficient: 1.0
Structures on canal	4 sluices 1 regulator which is bridge on canal

DATA ITEM	SUBPROJECT DATA
	1 bridge on canal 4 primitive bridges 1 water discharge sluice (which is bridge on canal)
The width and length of management road	Length of management road : 540 m from Km 0+14.70 m ÷ Km 554.70 m Wide : 7.0 m
CONSTRUCTION ACTIVITIES	
Construction commencement date (month/year)	<i>Ba Bau North main primary upgrading –Phase 2 :</i> Commencement date : June 2016 Additional works : Expected May 2018
Construction completion date (month/year)	<i>Ba Bau North main primary upgrading –Phase 2 :</i> Completion date : June 2017 Additional works : Expected May 2019
Number of construction workers	Approx. about 100 workers (average)
Construction camp required (Yes/No)	Yes. worker-based camps/ rent local people houses
Construction in rainy season (Yes/No)	In case of favorable weather conditions
Number and conditions construction vehicles and equipment	Estimated + Excavators: 6 units; + Bulldozers: 7 units; + Dump-trucks 5 tons : 12 units; Concrete compactors of all kinds: 06 units; + Water pumps: 04 units; Generators: 02 units; Water spraying vehicles: 01 unit; + Oil trucks: 01 unit + Cutters, benders: 04 units + Concrete mixing machines: 8 units;
Location and square of disposal site and sources of materials	<u>Permanent disposal site:</u> Disposal sites to be in hollow areas along Bac Ba Bau main canal in Ham Thanh commune – Ham Thuan Nam District & approved by Ham Thanh CPC <u>Temporary gathering site:</u> Temporary material This location will be located at the Ham Thanh CPC 's yard, public house or renting house in local sites; <u>Sources of materials:</u> Sand will be provided by service which exploits in Ba Bau sand grounds in Ba Bau river, 15 km, from the project site that has been operated under the permission of local authorities of Ham Thuan Bac district. Soil : will be exploited from hills in Ham Tri which are reserved for construction of local infrastructure. Soil exploitation area is

DATA ITEM	SUBPROJECT DATA																										
	pre-planned by Ham Thuan Bac district and communal authorities. Other construction material (steel, cement ...) will be provided from services in Ham Thuan Bac central district.																										
Quantity of excavated soil & filling soil	Excavated soil of all types: 68,868 m3 Filling soil of all type: 28,303 m3 Balance : - 40,565 m3 Discarded soil quantity: 13,773 m3 (about 20% of excavated soil) Discarded soil will be dumped at hollow areas along Bac Ba Bau main canal Ham Thanh commune – Ham Thuan Nam District & approved by Ham Thanh CPC and dumped at local peoples gardens far from the Site about 300 - 600 m																										
Balancing and management measures for excavated/excess soil	The excavated soil will be used for backfill of management/production road along the canal system																										
Quantity of construction materials	<table><tr><td>Item</td><td>Unit</td><td>Quantity</td></tr><tr><td>Stone</td><td>m3</td><td>177</td></tr><tr><td>Sand</td><td>m3</td><td>150</td></tr><tr><td>Concrete</td><td>m3</td><td>13,290</td></tr><tr><td>Asphalted paper</td><td>m2</td><td>2,613</td></tr><tr><td>Macadam</td><td>m3</td><td>41.43</td></tr><tr><td>Steels</td><td>Kg</td><td>34,000</td></tr><tr><td>Formwork</td><td>m2</td><td>53,486</td></tr></table>			Item	Unit	Quantity	Stone	m3	177	Sand	m3	150	Concrete	m3	13,290	Asphalted paper	m2	2,613	Macadam	m3	41.43	Steels	Kg	34,000	Formwork	m2	53,486
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OPERATION AND MAINTENANCE ACTIVITIES																											
Subproject irrigated area (ha)	Added concreted canal section will be ensured to irrigate 325.5 ha of cultivated land in Ham Thanh commune –Ham Thuan Nam District																										
Periodically time for maintenance activities	Every year																										
Responsibility for Operation and Maintenance	Maintenance activities as well as their financial preparation will be implemented by Binh Thuan Irrigation Management Company (in specific is its branch company: Ham Thuan Bac Irrigation Enterprise); Communes as Ham Chinh & Ham Lien are in charge of tertiary canal system maintenance; Supporting structure maintenance will be examined after harvesting season, before and after disaster. Main structure will be checked every year to ensure canal system operation, by irrigation enterprises, district and communes;																										
Maintenance activities	The agency is responsible for operation and maintenance works after completion (i) Regular operate and maintain:																										

DATA ITEM	SUBPROJECT DATA
	<p>Carry out regularly to minimize broken for works, including: drainage canal heart, do clearance, repair temporary broken, maintain exhaust and paint for mechanical equipment</p> <p>(ii) Periodically operate and maintain</p> <p>Carry out for broken and downgraded section to restore works item. Displace mechanic items and repair broken, carry out dredging and maintain canal side.</p> <p>Frequency: twice/ a year</p> <p>(iii) Operation and maintenance in case of emergency: carry out repair for broken and downgraded items. Carry out check, propose technical method and cost for repairing based on current regulation of State.</p>
RESETTLEMENT AND LAND ACQUISITION ¹	
Number of Affected households	<p><i>Ba Bau North main primary upgrading –Phase 2 :</i></p> <p>No land acquisition both temporary & permanent land and no households to be replaced</p> <p><i>Additional works</i></p> <p>No land acquisition both temporary & permanent land and no households to be replaced</p>
SUBPROJECT COST	
Total subproject cost (VND and \$USD)	33,583,707,647 VND ; 1.449.060 USD (at 1USD = 22.660 VND) (from updated SIR)

¹ This data is obtained from Resettlement Plan

Figure 1: Map of the proposed lining Bac Ba Bau Canal of Ba Bau Reservoir ‘s irrigation canal system

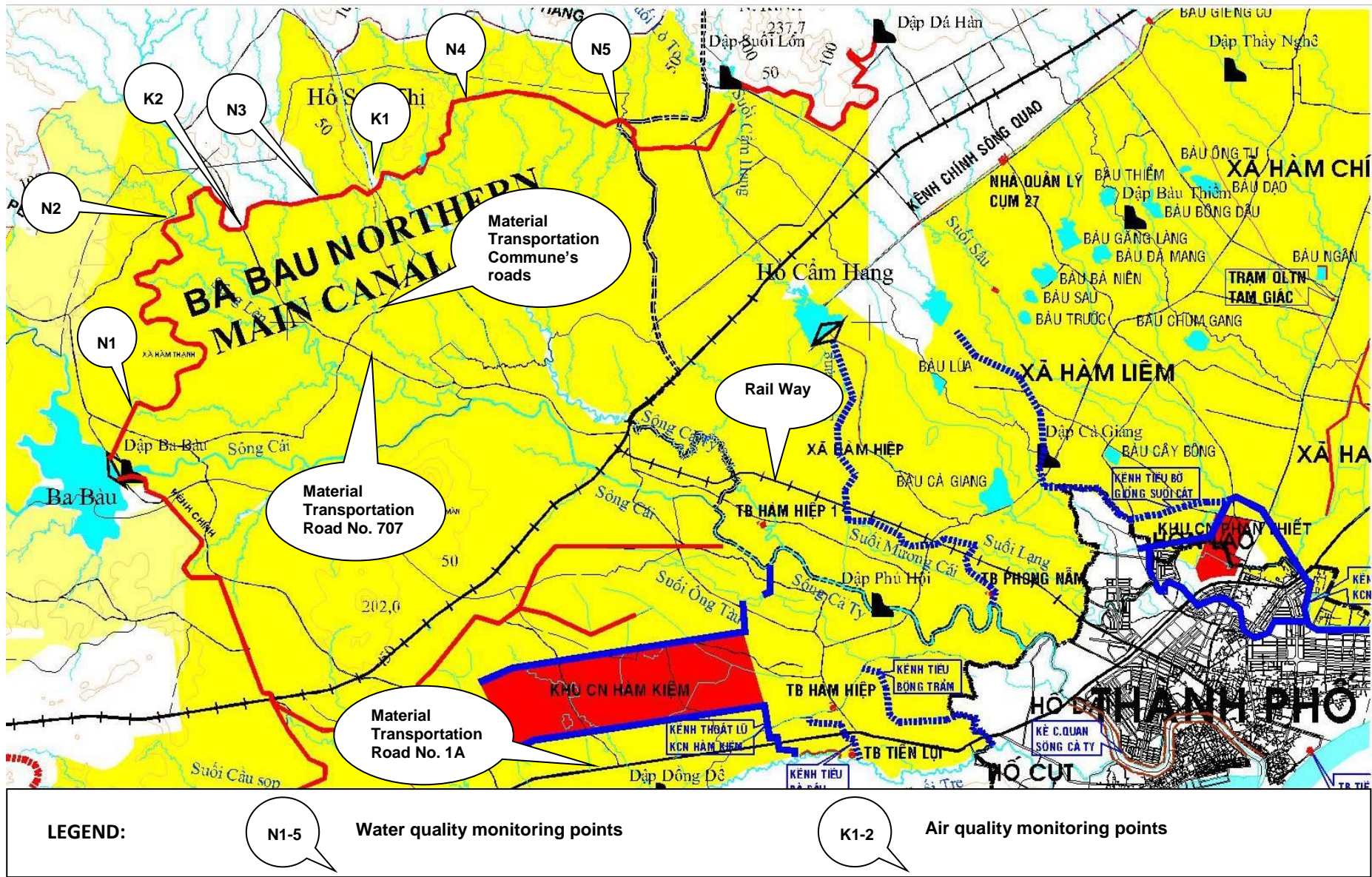
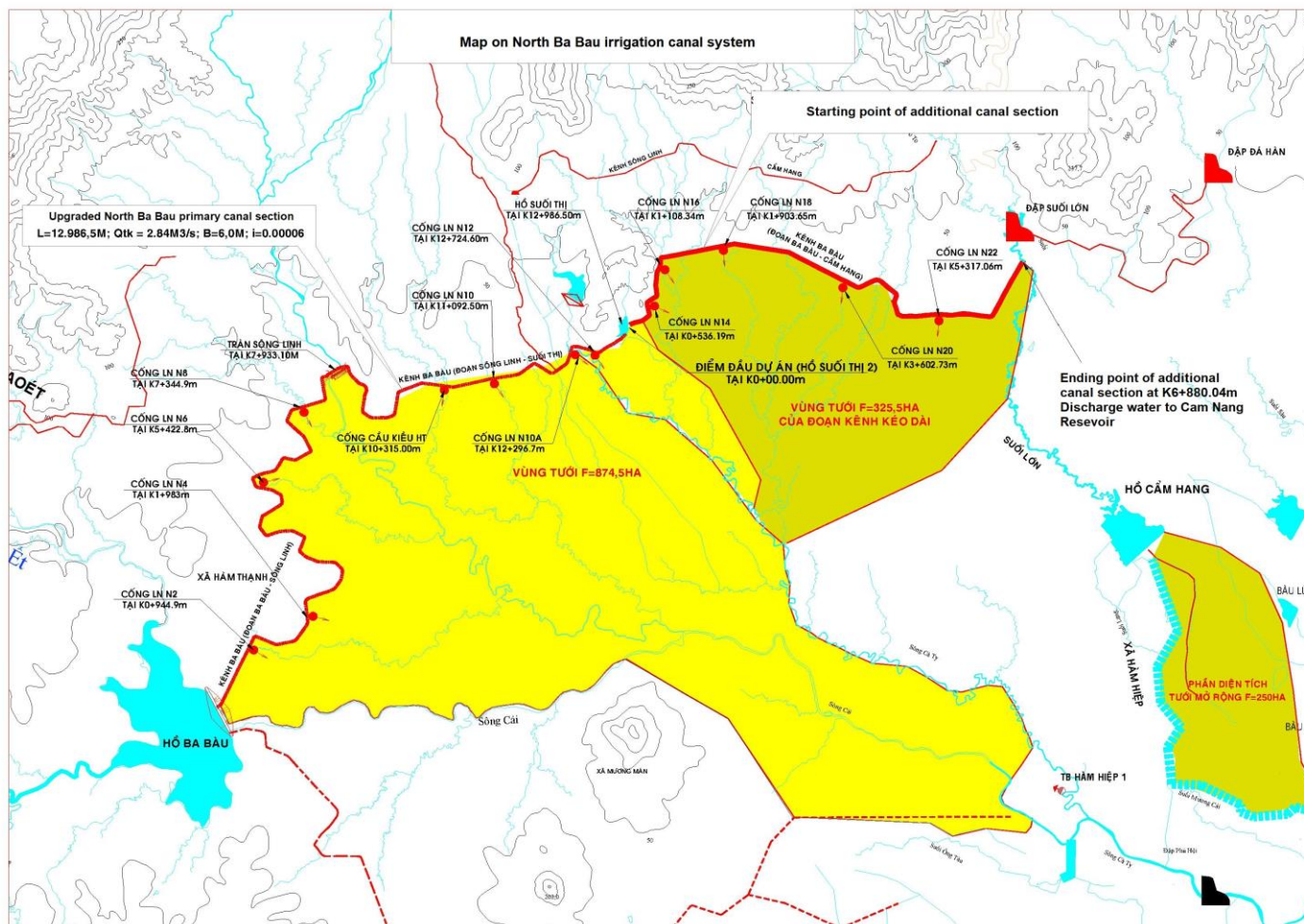


Figure 2: Map of the proposed lining Bac Ba Bau additional Canal of Ba Bau Reservoir 's irrigation canal system



3. ENVIRONMENTAL POTENTIAL IMPACT

Table 2. Environmental Potential impacts

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				The canal is upgraded from existing alignment. The subproject is located in rural area, consisting of agricultural cultivation area, existing residential area. Thus, there is no possible of UXO
Impacts on households from loss of residential or agricultural land	No				There is no household requiring relocation in the subproject. No land acquisitions for this canal extension.
Construction Stage Impacts					
Erosion or sedimentation caused by during clearing or earthworks	Yes	Minor	Negative	Temporary	<p>In the work of excavating and filling the canal embankment, construction of the facilities on the canal (culvert transferring water to branch canal, flood spillway) if excavated soil is not collected then siltation will be occurred, obstruct the water transmission capacity from the main canal to branch canal</p> <p>The excavated soil will be used for upgrading of management/production/interior field road along the canal system</p> <p>Contractor is responsible for waste soil management</p> <p>Soil from excavation of canal construction, canal bank fill (water inlet, lateral spillway) not collected causing sedimentation in the canal bed, preventing water flow from main canal into the branches; sedimentation may affect the rice/ dragon fields of the local peoples;</p> <p><u>Location:</u> along the 6,854 m of main canal; at location of culvert to branch canals, rice/dragon fruit</p>

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

Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh 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?	
					<p>fields closed by the canal; Objects</p> <ul style="list-style-type: none"> • Rice/dragon fields closed by the subproject canals • Local peoples in beneficiary area <p><u>Impact level:</u> Minor due to excavated volume soil is designed to fill embankment and managed/production road. <u>Impact duration:</u> about 12 months;</p>
Polluted soil due to leakage of oil and other chemical substances.	Yes	Minor	Negative	Temporary	<p>In the process of pumping for dry foundation holes for the canal construction and other works on the canal, oil and grease leakage will generate water pollution. <u>Location:</u> at the subsection of canal under construction along the 6,854 m of main canal to be upgraded Objects</p> <ul style="list-style-type: none"> • The subproject canal's water quality • Local peoples in the beneficiary project area <p><u>Impact level:</u> Machine oil and grease pollution on the canal and facilities is insignificant as: (i) construction activities are mainly manual, small number of construction machines (see project description); (ii) construction activities are scattered on a 12,414 m of the length of main canal; thus, the oil and grease leakage is insignificant; <u>Impact duration:</u> about 12 months</p>
Generate a big quantity of dredged soil which can be reused	Yes	Minor	Positive	Temporary	<p>Excavated soil of all types : 68,868 m³ Filling soil of all types : 28,303 m³ About 80% of excavated soil of all types : 55,094 m³ can be reused for re-filling embankment and management road Discarded soil quantity: 13,774 m³ (20% of excavated soil) Discarded soil will be dumped at hollow areas along Bac Ba Bau main canal Ham Thanh</p>

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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?	
					<p>commune – Ham Thuan Nam District & approved by Ham Thanh CPC and dumped at local peoples gardens far from the Site about 300 - 600 m</p> <p>Thus, most of excavated soil which can be reused and will not impact on environment.</p> <p><u>Location</u>: along the 68,886 m of main canal to be upgraded</p> <p>Objects</p> <p>Local peoples in the subproject area</p> <p><u>Impact duration</u>: about 12 months;</p>
Impacts from temporary storage site for construction materials, including: dust, noise.	Yes	Minor	Negative	Temporary	<p>- Stone, sand will be stored near Ba Bau river where uncultivated land to minimize affecting on living residents;</p> <p>- Steel, cement, bitumen will be stored at commune PCs, other public buildings or in houses.</p> <p>-<u>Transportation of material</u> will generate noise, dust which affect local residents along transportation road (PR 707, NH 1A, inter- commune road...)</p> <p>Total quantity of materials needed for construction is estimated as:</p> <p>Stone: 177 m³</p> <p>Sand : 150 m³</p> <p>Macadam: 41.43 m³</p> <p><u>Location</u>: Temporary material store sites, material transportation roads</p> <p>Objects :</p> <ul style="list-style-type: none"> • Local residents along transportation roads • Local residents living around temporary material store sites <p><u>Impact level</u>: The same to the existing subproject</p> <p><u>Impact duration</u>: estimated 12 months</p>
Other impacts in quarries for construction	Yes	Minor – Moderate	Negative	Temporary	<p>Construction material_transportation to the construction site will affect the local roads in the Subproject two communes.</p> <p><u>Location</u></p>

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

Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh 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?	
material on dust, noise, working safety and water or soil pollution by exploitation activities:					<p><u>Soil</u>: will be reused from excavated soil.</p> <p><u>Sand</u>: will be exploited in Ba Bau sand grounds in Ba Bau river, 15 km from the project site that has been operated under the permission of local authorities of Ham Thuan Bac district.</p> <p><u>Gravel</u>: will be exploited in Ba Bau area, 10 km from the project site</p> <p><u>Macadam</u>: will be bought at Ham Kien Quarry, , about 33 km from the project site</p> <p><u>Stone</u>: will be bought at Ta Zon Quarry , about 46 km from the project site</p> <p>All Gravel , Macadam, Stone have been operated under the permission of local authorities of Ham Thuan Bac district.</p> <p><u>Other construction material</u> (cement, iron, steel) will be provided from services in Phan Thiet City, about 10-15 km from the project site</p> <p><u>Objects</u> :</p> <ul style="list-style-type: none"> • PR 707, NH1A , inter-district & inter-commune roads in the Subproject twelve communes • Local peoples around quarries • The subproject workers • Water quality of water bodies near the quarries • Soil quality of borrow areas <p><u>Impact level</u></p> <p>Materials will be bought from sources which are licensed and confirmed by the environmental regulations. So only impact could be from dust and noise during the transport of materials from quarries to construction sites.</p> <p>Dust and noise will not be seriously affected because (i) loading capacity of vehicles is less than 10 tons, (ii) communal roads are almost structured of concrete with the width of 3.5 – 5.0m for higher bearing-capacity; and (iii) construction area is mainly in the field, away from residential area.</p> <p><u>Impact duration</u>: 12 months</p> <p>This impact is considered at small level due to (i) the number of construction machine is not large; (ii) construction area is mainly in the field, away from residential areas; (iii) Impact of noise to</p>

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Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh 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?	
					residential areas is mainly caused by the means of materials transportation during the construction along transportation route.
Pollution of river, stream, canal, aquatic environments or underground water from wastes, chemicals or waste water	Yes	Minor	Negative	Temporary	<p>In the process of pumping out water to dry foundation holes for the canal construction and other works on the canal, oil and grease leakage will generate water pollution.</p> <p><u>Location:</u> along the 6,854 m of length of main canal to be upgraded in Ham Thanh and Ham Hiep communes</p> <p><u>Objects :</u></p> <ul style="list-style-type: none"> • The subproject canal's water quality • Aquatic environments • Groundwater quality around the subproject canals <p><u>Impact level:</u> Insignificant because: (i) The construction is mainly implemented manually, the number of construction machines is small; (ii) the construction is scattered along the canal, thus the concentration of the uncontrolled waste , oil and grease leaking is not remarkable;</p> <p><u>Impact duration:</u> 12 months</p>
Making sensitive flora disappeared and deteriorated	No				The construction sites are in existing agricultural lands, mostly rice & dragon fruit plant land
Dust and exhaust emission from construction equipment and machinery	Yes	Minor	Negative	Temporary	<p><u>Location:</u> along the 6.854 m of length of main canal to be upgraded</p> <p><u>Objects:</u></p> <ul style="list-style-type: none"> • The subproject workers • Local people in the subproject area <p><u>Impact level :</u> Minor</p> <ul style="list-style-type: none"> ▪ Construction activities on canal do not cause dust or exhaust, because (i) used only light weight and small machinery, such as Truck 5 tons, Excavator 0.4-0.8 m³ , Compactor 9 tons , Bulldozer

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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?	
					<p>75CV (ii) the quality of machine has been registered, controlled and maintained periodically.</p> <ul style="list-style-type: none"> Dust and noise is mainly from transportation process of construction material. (iii) There are no residents area living along construction routes . <p><u>Impact duration:</u> Estimate 12 months</p>
Noise from construction machine	Yes	Minor	Negative	Temporary	<p><u>Location:</u> along the 6,854 m of length of main canal to be upgraded</p> <p>Objects:</p> <ul style="list-style-type: none"> The subproject workers Local peoples in the subproject area <p><u>Impact level:</u> is minor, because (i) Number of vehicles, construction equipment and machinery is not remarkable, therefore, noise level will be under allowed limit level.</p> <p>(ii) There are no resident's areas living along construction routes.</p> <p><u>Impact duration:</u> Estimate 12 months</p>
Increase flooding time and area	No				Canals will take the function of irrigating water for cultivation areas and take no function of drainage; therefore the drainage of the area will not be affected by construction activities;
Effects on infrastructure works like communication cables and drainage system, etc.	No				<p>Additional lining canal section of North Ba Bau main canal system will be constructed/upgraded following the existing route and will not affect the infrastructure works;</p> <p>However, some trees and barb wire fence, button pillar for dragon fruit to be affected by the subproject. In addition canal construction through dragoon fruit areas may have effects on dragoon fruit productivity of farmers living in the Subproject Communes ;</p>
Employment or livelihood benefits from employment	Yes	Significant	Positive	Temporary	<p>Local labours (have professional skills and simple labour) will be employed for construction; their livelihood/living standard will be remarkably improved thanks to extra works</p> <p><u>Location:</u> additional_works area in Dan Thuan Village of Ham Thanh Commune and Xuân Dien &</p>

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

Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh 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?	
of local people					<p>Dai Loc in Ham Hiep Commune –Ham Thuan Nam District</p> <p>Objects:</p> <ul style="list-style-type: none"> Local peoples in the additional work area : Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune <p><u>Impact duration</u>: about 12 months</p>
Effects on social aspect due to workers at site	Yes	Minor	Negative	Temporary	<p><u>Impact level</u></p> <p>The presence of workers from other regions may cause social evil such as gambling, theft, drug, prostitution, etc. or conflict appear between construction workers and local peoples. However, these impacts are minor because workers will be registered with local police to manage labours from other places & strict management of Contractor</p> <p><u>Impact duration</u>: estimate 12 months;</p>
Risks to public or construction worker health or safety	Yes	Minor	Negative	Temporary	<p><u>Objects & Main risks</u>:</p> <ul style="list-style-type: none"> Construction machines and equipment are arranged along the canal, obstructing the travelling of the residents and endangering the traffic, especially at nights; There will be the risk of unsafe traffic conditions on the commune road, especially at intersection with residential road. Dust and noise from material transport will have impacts on daily life of residents living in the subproject area; There will be the risk of site incidents due to the improper use of equipment and machines; <p><u>Location</u>: residential areas along the transport road (PR 707, NH1A, inter- commune road..) and near the canal construction area;</p> <p><u>Impact level</u>: the above risks are insignificant because (i) the contractor will control the arrangement of equipment on site; (ii) travel demand on road along the canal is not high (iii) material transport will be carried out in day time to avoid the rest of residents; (iv) the contractor will conduct training courses on labour safety for workers prior to the subproject commencement;</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?	
					<u>Impacted duration</u> estimate 12 months
Effects on nearby heritage items such as graves, pagodas etc.	No				There is no cultural heritage, tomb, and pagodas close to construction site;
Risks of natural calamity	Yes	Minor	Negative	Temporary	<p><u>Location</u>: along the 6,854 m of length of main canal to be upgraded and facilities on canal to be constructed</p> <p>In subproject may be happen flood and storm, most in October and November. Storm and flood often causes flooding</p> <p><u>Objects</u>:</p> <ul style="list-style-type: none"> • Local peoples in additional_works area in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune • The additional canal section <p><u>Impact level</u></p> <p>Natural calamity will have serious effects on resident life as well as economic growth in the region. However, directly impacts subproject on canals is minor because its position in dragon fruit & paddy field, not directly suffered from river</p> <p><u>Impact duration</u>: estimate 12 months</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?	
Solid waste generated from construction activities or camp	Yes	Minor	Negative	Temporary	<p><u>Location:</u> Worker Camp and construction site in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune</p> <p>Domestic wastes including solid waste and wastewater in construction camp could cause water and air pollution along canal</p> <p>Objects :</p> <ul style="list-style-type: none"> • Air quality in & around worker camps • Water quality of water bodies nearby worker camps • Workers living in the camps <p><u>Impact level</u> is minor as Contractor will collect and manage waste and small scale worker camps</p> <p><u>Impact duration:</u> estimated 12 months</p>
Affect irrigation water supply system for agriculture production	Yes	Minor	Negative	Temporary	<p>Lining and upgrading of 6,854 m of Bac Ba Bau main canal requires dry construction area, meaning of stop water flow in the existing canal. There will be a conflict between water demand for agriculture and construction demand during dragon fruit & rice cultivation period and construction time;</p> <p><u>Location:</u> 6,854 m of Bac Ba Bau main canal and downstream dragon & rice cultivation area ;</p> <p>Objects :</p> <ul style="list-style-type: none"> • Rice/ dragon fields irrigated by the subproject canals • Local peoples/farmers using water supply by the additional canal section <p><u>Impact level:</u> Irrigation schedule could be changed flexibly to construction time, namely construction time will be dry season: from Jan to May, this time is Spring-winter rice crop but dragon fruit crop: all year around . The contractor will build divert canal to transfer water directly to rice field or dragon fruit field by pumping. Therefore this impact could be mitigated and impact level is considered at small level ;</p> <p><u>Impact duration:</u> As per crop water supply schedule and construction time; expected within 10 months</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?	
Impacts in operation stage					
Vegetables and trees areas will be flooded due to water filling/ storing and operation of irrigation canal	No				i) Completion of 6.854m of Bac Ba Bau main canal and auxiliary works in canal will ensure irrigation capacity of 325.5 ha of cultivated land in Ham Thanh commune –Ham Thuan Nam District ii) Regulation Sluices on Bac Ba Bau main canal have adjusting valves to control the water level; Therefore, there will be no risk of flooding situation on cultivation areas.
Excessive exploitation of surface water and groundwater will make water supply capacity cannot catch up with demands and/or cause conflicts among households	No				i) Reasonably exploit water source following approved design assignments (irrigation capacity has not reached the maximum rate as designed capacity (total 1,450 ha); ii) Further increase the water supply capacity to meet demands of water users, especially 100 ha in Phase 1 and will increase 325.5 ha in additional work for cultivated land in 2 communes : Ham Thanh & Ham Hiep communes, 250 ha of cultivated land, of which mostly dragoon fruit land in Cam Hang reservoir’s irrigation area which has not been supplied with water for a long time from the project site; iii) Accordingly, conflicts among households will be remarkably reduced;
Water quality is changed due to salinity intrusion, aluminiferous water or sedimentation	No				i) The area is not affected by seawater or tide, so it is not affected by salinity intrusion or alumiferious; ii) Sediment of the canal bed is dredged and the canal is upgraded by concrete instead of the earth canal, so that the water quality will not be polluted by sediment.

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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?	
Water is exploited at sensitive ecological places/or reservation areas	No				i) There is no sensitive ecological areas or protection areas in the subproject area; ii) Water source for irrigation is taken from Bac Ba Bau main canal of Ba Bau Reservoir which was built primarily to serve a purpose of agricultural water supply
Changing living conditions and/or public health thanks to improved water supply	Yes	Significant	Positive	Permanent	<u>Location:</u> beneficiary area in Ham Thanh & Ham Hiep Commune <u>Objects :</u> <u>Local peoples in beneficiary area</u> <u>Scope:</u> Living conditions and standard is improved thanks to providing of enough water for intensive cultivation demands in agriculture
Productivity is improved by increase of irrigation capacity	Yes	Significant	Positive	Permanent	<u>Location:</u> beneficiary area Ham Thanh & Ham Hiep Commune <u>Scope:</u> the cultivation area is increase, water supply is initiative; productivity and output are increased; <u>Objects :</u> Local peoples in beneficiary area
Cultivation habits will be changed due to the turning of land use for agriculture purposes	Yes	Significant	Positive	Permanent	<u>Location:</u> beneficiary area in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune <u>Scope:</u> agriculture area is increased (mainly dragon fruit & rice need to be irrigated sustainably) thanks to supplying sufficient water, land structure will be changed following extensive cultivation, cultivation productivity increase <u>Objects :</u> Local peoples in beneficiary area
Leaching nutrition	Yes	Minor	Negative	Permanent	There is not statistics or research in the area regarding the percentage loss of nutrients. Actually,

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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?	
from soil or salinity of soils due to excessive irrigation (not following irrigation regimes and specifications);					<p>the rate of soil nutrient loss is very small due to the cultivation in the plain with small slope that cannot cause drift of soil when it rains or excessive irrigation. After the irrigation canal is complete, the regulating system will be facilitated and more flexible, hence, the land will not lose nutrients due to excessive irrigation;</p> <p><u>Location:</u> beneficiary area in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune</p> <p>Objects :</p> <ul style="list-style-type: none"> • Soil quality of Cultivated land • Local peoples in beneficiary area <p><u>Impact level:</u> is small due to application of advanced technology in agriculture</p>
Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water	Yes	Minor	Negative	Permanent	<p><u>Location:</u> Benefit area: 325.5 ha</p> <p><u>Impact level:</u> is small due to application of advanced technology in agriculture;</p> <p><u>Scope</u></p> <p>After upgrading the irrigation system, the cultivated area will increase about 350 ha. Consequently, the quantity of pesticides or chemical fertilizers will be increased.</p> <p>The amount of pesticides on field surface and drainage system will affect the quality of agricultural land and irrigation water, possibly groundwater. The risk will increase if the management of pesticides is not reasonable.</p> <p>& applied IPM method</p>
Congested canals cause flooding situation	Yes	Negative	Minor	Permanent	<p>In case of improperly operation and regulation of the culvert system, water will cause overflows and broke the canal.</p> <p>In addition, waste, weed growing on the branch canal can reduce water transmission capacity of the primary canal;</p> <p>Objects :</p> <ul style="list-style-type: none"> • The subproject canals

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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?	
					<ul style="list-style-type: none"> Local peoples in beneficiary area <u>Location</u>: along the 6,854 m of length of main canal, at sluice gates
Risks caused by natural calamity	Yes	Minor	Negative	Permanent	<p>Natural calamity will have serious effects on resident life as well as economic growth in the region. However, directly impacts on canal is minor because its position in dragon fruit paddy field, not directly suffered from river.</p> <p>Location: Houses, Cultivated area & infrastructures in the project area</p> <p>Objects</p> <ul style="list-style-type: none"> Local peoples in the subproject area The additional canals
Changing the service approaching ability of local residents thanks to building approaching road for the work	Yes	Significant	Positive	Permanent	Upgrading rural road is not included in additional works
Effects on employment and livelihood	Yes	Significant	Positive	Permanent	<p>Employment and jobs will be diversified thanks to the increase of project effectiveness;</p> <p>Location:</p> <p>Additional work area : in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune</p> <p>Objects : Local peoples in beneficiary area</p>
Increase solid waste in	Yes	Minor	Negative	Permanent	Agricultural wastes after harvest or waste of production activities such as insecticide cover, dragon fruit & rice straw occurs popular. However, the canals are small and easily to clean by hand

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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?	
productive area					Location: Benefit area of 325.5 ha Objects <ul style="list-style-type: none">• The additional canals• Local peoples in beneficiary area

4. OUTLINE UPDATED ENVIRONMENTAL MANAGEMENT PLAN (EMP)

4.1 Environmental Mitigation Plan

Table 3. Environmental mitigation plan

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	COST
Pre-Construction			
Effects on households from loss of residential or agricultural land	No households to be relocated & no land acquisition in this subproject in Phase 1 and in additional works		
Construction stage			
Erosion or sedimentation caused by during clearing or earthworks	<ul style="list-style-type: none"> Excavation works need to be scheduled to avoid rainy season (from end of May to October) as much as possible. Install sediment fence and/or sediment traps around the temporary excavated material area to collect sediment before it enters to reservoirs and/or canals. Material storage areas need to be bounded and covered during rainy times. Gather material, soil far from constructed reservoirs and canals, which cause sediment. Construct temporary drainage trenches for reducing effects on residential area. Stabilize all slopes, embankments and other erosion-prone working areas while works are proceeding at borrow pits (hills in Ham Tri) and disposal areas (hollow areas along Bac Ba Bau main canal Ham Thanh commune); Minimize area of land clearance and duration of works within this area; Undertake progressive re -vegetation of land clearance areas Avoid clearing activities during the rainy season where possible Not allow any heavy machine or other equipment to be located on the top of digging areas to avoid possible landslides. 	Contractor	Included in the Contract with the Contractor

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Polluted soil due to leakage of oil and other chemical substances	<ul style="list-style-type: none"> Store chemicals (lubricating oil, etc.) in safe area with impermeable containment and weatherproof roof; Covering material storage areas and handling chemicals and wastes to ensure that construction materials and/or wastes could not fall into agricultural land in the sub-project areas. Discarded lubricant, chemicals must be kept in dry area or covered when raining. Regularly collect solid wastes and transport these to local disposal areas agreed with Ham Thuan & Ham Hiep CPC; Provide 04 dustbins in all construction sites and mobility septic tanks for worker camps. Wastewater from worker camps needs to be collected and treated by mobile septic tanks before discarded. 	Contractor	Included in the Contract with the Contractor
Impacts from temporary storage site for construction materials, including: dust, noise.	<ul style="list-style-type: none"> Provide public information for local people on construction conditions; Minimize clearance and cut off crop and tree to reduce dust and noise at temporary material store Ensure that all machines are in good operation condition 	Contractor	Included in the Contract with the Contractor
Other impacts in quarries for construction material on dust, noise, working safety and water or soil pollution by exploitation activities	<ul style="list-style-type: none"> In soil quarries, Contractor should follow environmental protection issues, including: <ul style="list-style-type: none"> Working machines must be under periodically quality controlled; Oil and other chemical pollutants from working machines should be strictly controlled and stored separately, avoiding leakages; Workers should use protective equipment while working within the Site; Fence should be erected surrounding the working area to prevent intrusion by cultivators, local people or animals; Temporary earth drainage system and ditch should be formed to store waste water safely in rainy season to reduce turbidity before releasing water into cultivated area; Water should be regularly sprayed within borrow areas to reduce dust generation; The contractor should select registered service providers with necessary licenses to supply construction materials such as sand and stone; 	Contractor	Included in the Contract with the Contractor
Pollution of	<ul style="list-style-type: none"> Store chemicals (lubricating oil, etc.) in safe area with impermeable containment and 	Contractor	Included in the

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waterways, aquatic environment or groundwater due to rubbish, chemical substance or polluted soil	<ul style="list-style-type: none"> weatherproof roof; Use mobile sanitary toilets following regulations of Health Ministry and washing facilities at construction camps Do not wash construction vehicles and equipment onsite to avoid pollution by lubricating oil from washing. Waste water and wasted lubricating oil should be controlled in accordance with relevant regulations on wastewater and hazardous wastes; Regularly collect and dispose-off the wastes 		Contract with the Contractor
Dust and exhaust fume from construction equipment and machinery	<ul style="list-style-type: none"> Cover all trucks carrying materials to or from the site; Ensure all construction vehicles and equipment is well-maintained Equipment and machines will not be allowed to move outside of construction sites to ensure control of emission sources; Material or soil are falling from public road be removed immediately. All material/waste storages must be located away from any households and sensitive areas 	Contractor	Included in the Contract with the Contractor
Noise from construction machine	<ul style="list-style-type: none"> Construction vehicles, machines and equipment need to meet the 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 generation of the current Vietnam standards. All construction vehicles and equipment are well maintained. Turn off machines and/or equipment when possible to avoid continuous noise and vibration impacts on workers. All noise and vibration generating activities must be avoided during resting time of local people (12-13h and 20h to 6h) along the upgrading of added canal section in in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune Provide ears' protective equipment for workers working in high noise conditions generated by machines 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 QCVN 24:2016/BYT of Ministry of Health; Detailed construction schedule needs to be publicly announced by the contractor to local people (on the notice boards of Ham Thuan & Ham Hiep commune) so that these arrange their activities, 	Contractor	Included in the Contract with the Contractor Local budget for community monitoring activities

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	avoiding being close to the working sites and be affected by the impact to noise and vibrations.		
Effects on social aspect due to workers at site	<ul style="list-style-type: none"> ▪ Recruitment of workers should prioritize local workers. ▪ Register provisional residence for workers temporary living in worker camps of the added works area . ▪ Contractor needs to regulate camp sanitation regulations. ▪ Consult local authorized staff to prepare house renting plan for workers at the same local area; ▪ Consult local staff to consider the ability of renting house for workers instead of building camps; ▪ In case of camps at site, it is necessary to ensure that camps are maintained in good conditions; ▪ Provide training to workers on the way of communicating with local community, abiding laws and traditional customs and culture in the local area and implement education programs on sanitation/hygienic means and diseases through contact; ▪ Implement communication of prevention of HIV/AIDS and sexually transmitted diseases and dissemination on social evils like drugs, gambling, prostitution, violence, stealing, etc. ▪ Delivery condoms to workers 	Contractor PCs at all level, bureau of social evil prevention, Center of HIV/AIDS prevention and Center of Contingency Medical/Committee of HIV/AIDS prevention at commune/ward levels and at other levels/ NGO	Included in the Contract with the Contractor Relevant programs under local budget such as HIV/AIDS and social evils prevention
Risks to public or construction worker health or safety	<ul style="list-style-type: none"> ▪ 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; Collaborate with commune clinic center to receive additional support. ▪ Provide safety equipment to workers like mufflers, gloves, safety belt and train them in its use. Functional agencies always check and supervise works on labour safety of workers at site and residents within the construction area; ▪ Regularly implement working inspection to ensure working safety in the construction area; ▪ Secure construction site and restrict access by local community by arranging warning signs and fencing wall; ▪ Inform residents about possible incidents or risks during construction by louder speakers. ▪ Install fences, warning signs at the intersection between the canals and roads. ▪ Construct temporary drainage ditches to drain water from site, prevent any possible waterlogging. 	Contractor Construction monitoring consultant Construction management and Environmental management contractor	Included in the Contract with the Contractor

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Risks of natural calamity	<ul style="list-style-type: none"> Ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity; Binh Thuan Irrigation Management Company closely coordinate with Disaster Mitigation & Flooding Prevention Committee in the local area to timely find out assistance methods such as: fight with flooding, storm etc. 	Designing Consultant, Binh Thuan Irrigation Management Company, Provincial Natural Calamity & Flooding Prevention Committee	Without marginal cost
Solid waste generated from construction activities or camp	<ul style="list-style-type: none"> Establish temporary latrines which meet regulations of Health Ministry and supply enough water to camp. Collect solid wastes and temporary store at a safety place before transporting to disposal sites; Discarded soil quantity (approximate 13,773 m³) has to be regularly removed to the hollow areas along Bac Ba Bau main canal in Ham Thanh Commune –Ham Thuan Nam District that approved by Ham Thanh CPC and dump at local people gardens far from the site about 300-600 m. In case that local people ask excavated soil for their house, the agreement between local households, contractors and local authorities need to be obtained. The transportation of discarded soil to disposal areas will be managed and implemented following mitigation measures in transportation to reduce air pollution. Equip 05 dustbins to work-sites for waste collection and treatment. Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited. Burning of construction and domestic wastes shall be prohibited. 	Contractor	Included in the Contract with the Contractor
Affect irrigation water supply system for agriculture	<ul style="list-style-type: none"> Construction of main canal should be implemented in dry season with application of construction and irrigation at same time. The Contractor should coordinate with irrigation authority (irrigation exploitation management enterprise), commune's irrigation staff and cultivation households in water supply area of 	PPMU/ Contractor; Irrigation management enterprises of	Included in the Contract with the Contractor

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production	<p>6,854 m to be upgraded of Bac Ba Bau main canal and it's primary & secondary canal which receiving water from this main canal to reach agreement on water supply time (when construction suspension), construction time (should be implemented at the time when irrigation activities are not done);</p> <ul style="list-style-type: none"> Commune's irrigation staff, irrigation exploitation enterprise or relevant authorities should early inform households and contractor on water supply schedule so that they can make plan on their own initiative; PPMU and the Contractor should pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to stop of water supply at cultivation area, etc. To implement stop of water supply alternatively, e. g water supply for 10 days, construction for 15 days. 	<p>province, commune authorities and local residents in Ham Thanh commune in Ham Thuan Nam District</p>	
Operation stage			
Leaching nutritive substances or salinity of soil disappeared due to excessive irrigation	Coordinate with agriculture authority to ensure that farmers are trained on proper irrigation method;	Agricultural extension center of the province	Local budget
Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water	<ul style="list-style-type: none"> Coordinate with agriculture authority to ensure that farmers are trained on irrigation method; Solid waste from pesticide, insecticide as well as other substance such as herbicide should be stored in tanks at cultivation area before transport to disposal sites; Coordinate with Agriculture Extension Centre to ensure that farmers are trained on Integrated Pesticide Management (IPM). Biological, environmental friendly pesticides must be introduced and their use be prioritized. Pesticides, which are less toxic, less durable in environment must be applied. Schedule of pesticides spreading must be appropriate to reduce their number and volume to a minimum in order to reduce pollution to local environment. 	DARD/ Agricultural extension center of the province	Local budget
Congested irrigation canal	<ul style="list-style-type: none"> Ensure that canal is regularly inspected and maintained. 	Binh Thuan Irrigation	Local budget

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causes flooding	Ensure weed and other floating waste are periodically cleaned along the canal;	Management Company	
Risks of natural calamity	<ul style="list-style-type: none">Ba Bau Reservoir's irrigation system management unit must closely coordinate with Natural Calamity & Flooding Prevention Committee in the local area to timely find out assistance methods.	Binh Thuan Irrigation Management Company; Provincial Natural Calamity & Flooding Prevention Committee	Local budget
Increase solid waste in productive area	<ul style="list-style-type: none">Periodically collect waste in canal ;Establish rubbish collecting system;Enhance farmers' awareness about managing and collecting rubbish in field and canal through training.	Binh Thuan Irrigation Management Company	Local budget

4.2 Environmental Monitoring Plan

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

Table 4. Environmental effects monitoring plan

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction stage						
Minimization of noise generation	Noise level	At 1 points where nearest residential area along North Ba Bau main canal section from K0+25,7m ÷ K6+880,04m	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ Community Supervision Board	Included in the CSC contracts Local budget
				Once/ 3 months during construction or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts Budget of PPMU
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team/ Community Supervision Board	Included in the LIC Contract
Minimization of dust generation	Dust concentration	The same locations to Noise Monitoring	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ Community Supervision Board	Included in the CSC contracts Local budget
				Once/ 3 months during construction or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community	Included in the CSC contracts Budget of PPMU Local budget

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					Supervision Board	
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team/ Community Supervision Board	Included in the LIC Contract
Control of surface water quality	Sedimentation, rubbish, lubricating oil and solid waste	04 points at 04 sluices 1 point at water sluice Suoi Thi 1 point at sluice N16 1 point at sluice N18 1 point at sluice N20	Visual Observation ; Sampling and analysis	Once/ 3 months during construction or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts Budget of PPMU
				Based on requirement of water supply	Local people, Local irrigation staff (commune)/ Community Supervision Board	Included in the CSC contracts Local Budget of PPMU
				Once every 6 months during construction or in case of at any time or in case of complaints of residents	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC contract
Control of irrigation capability	Meet irrigation demands following the agreed irrigation schedule	At 4 points of water sluice gates from the primary canal to branch canal: Suoi Thi, N16, N418, N20	Consider dragon fruit /rice harvest time and discuss with local residents within subproject area	Once every 6 months during construction or in case of at any time or in case of complaints of residents	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the CSC contracts & LIC Contract Local budget
				Following regional cropping water	Local residents, Community Supervision Board	Included in the CSC contracts Local budget

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Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				demand	Irrigation official in local area (commune)	of PPMU
Labor safety and community safety	Number, use of personal protection equipment; warning signal system Obey for traffic law of transportation mean of construction material	In construction area on road where carry material along residential areas of additional works area in in Dan Thuan Village of Ham Thanh Commune and Xuân Dien & Dai Loc in Ham Hiep Commune	Observation and community consultation	Weekly or when community' s feedback is raised	Local people, Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 3 months during construction or in case of essential time	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget Budget of PPMU
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Operation stage						
Using irrigation water	Conflicts during water source access as mentioned in report	At 4 points of water sluice gates from the primary canal to branch canal: Suoi Thi, N16, N418, N20	Observation and community consultation	Once every 6 months in first 2 years of operation	DARD of province; Binh Thuan Irrigation Management Company; irrigation official of commune, households/ Community Supervision Board	Included in operational stage budge of Binh Thuan Irrigation Management Company Local budget
Surface water quality	BOD, DO, pH, TSS, Total coliform; fecal coliform, turbidity	At 4 points of water sluice gates from the primary canal to branch canal: Suoi Thi, N16, N418, N20	Observation and community consultation Or sampling methods following Vietnamese standard when	Twice a year in two first years of operation (1 time in rainy season and 1 time in dry season)	DARD, Binh Thuan Irrigation Management Company; Community Supervision Board	

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
			receiving feedback from communities			
Waste management	Conditions on environmental sanitation within project area; temporary waste storage yard	Throughout added works area	Observation and community consultation	Once every 6 months in first 2 years of operation	Binh Thuan Irrigation Management Company; Community Supervision Board	
Periodical canal maintenance	Level of canal sedimentation and conditions of sluices, equipment and works on the main canal	Along the added canal section	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Binh Thuan Irrigation Management Company; Community Supervision Board	
Re-occupation of canal corridor	Occupation area, type of occupation (for planting trees or other purposes)	Along added canal section	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Binh Thuan Irrigation Management Company; Community Supervision Board	

4.2.1 Environmental Compliance Monitoring

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

Table 5. Environmental Compliance Monitoring

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction Stage						
Control of soil erosion and sedimentation	Ensure that soil erosion and sedimentation will not occur in construction site	Throughout the construction site	Observation and community consultation	Weekly and after heavy rain events	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community	Included in the CSC contracts & Local budget

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

Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh Thuan province

Integrated Rural Development in Central Provinces Project

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					Supervision Board	
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract Local budget
Storage of materials	Condition of materials storage areas	Throughout the construction site	Observation and community consultation	Weekly	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leakage	Throughout construction site	Observation and community consultation	Weekly	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Construction camp	Cleaning waste treatment;	At all camps	Observation	Weekly	Construction Supervision	Included

Initial Environmental Examination (IEE)/Commitment on Environmental Protection (CEP)
Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh Thuan province
Integrated Rural Development in Central Provinces Project

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
conditions	general conditions		and community consultation		Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	in the CSC contracts & Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Property access	Rehabilitate the possibility of temporary and fixed access	Affected assets: roads in commune and affected assets during construction	Observation and community consultation	Once during construction works and once after finishing construction	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Waste treatment	Environmental sanitation at construction site and temporary waste storage area	Throughout construction site	Observation and community consultation	Weekly	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 6 months during construction	Monitoring consultant on environmental safeguard	Included in the LIC Contract

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

Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh Thuan province

Integrated Rural Development in Central Provinces Project

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				or in case of at any time if necessary	policies/LIC Community Supervision Board	
Areas of standing water	Pond or standing water	Throughout construction site	Observation and community consultation	Weekly during rainy season	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant / Community Supervision Board	Included in the CSC contracts & Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC/ Community Supervision Board	Included in the LIC Contract
Operation stage						
Using irrigation water	Using matter	Households near canals	Observation and community consultation	Once every 6 months in first 5 years of operation	PPMU/Binh Thuan Irrigation Management Company; Community Supervision Board	Included in operational stage budget of Binh Thuan Irrigation Management Company Local budget
Soil erosion or land slide in canal	Conditions of canal; level of sludge in water	At sections which have not be rehabilitated	Observation	Once every 6 months in first 2 years of operation	PPMU/Binh Thuan Irrigation Management Company; Community Supervision Board	
Prevention of soil erosion and land slide in canal	Conditions of canal bank	At some representative locations in subproject area	Observation and community consultation	Once every 6 months in first 5 years of operation	PPMU/Binh Thuan Irrigation Management Company; Community	

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					Supervision Board ;	
Waste management	Conditions on environmental sanitation within project area; temporary waste storage yard	Throughout subproject area	Observation and community consultation	Once every 6 months in first 5 years of operation	PPMU/Binh Thuan Irrigation Management Company; Community Supervision Board	

4.3 uEMP Implementation Arrangements

Table 6. uEMP Implementation

Organization	Roles and Responsibilities		
	Additional works Preparation	Additional works Implementation	Additional Operation
CPMU	Provide advice to PPMU Safeguards Officer on uEMP preparation Review and provide “no-objection” on uEMP submitted by PPMUs	Provide advice to PPMU Safeguards Officer on uEMP implementation during construction Monitor progress during construction Consolidate PPMU environmental reporting	Provide advice to PPMU Safeguards Officer on uEMP implementation during first year of operation Monitor progress during first year of operation Consolidate PPMU environmental reporting
PPC		Project owner with ultimate responsibility for environmental performance of subproject during construction	Project owner with responsibility for operation stage environmental performance including implementation of uEMP during operation
DONRE		Monitoring implementation of uEMP through their own internal monitoring system	Monitoring implementation of uEMP through their own internal monitoring system
PPMU		Responsibility for uEMP implementation during pre-construction and construction Ensure that contract specifications and bid documents include environmental requirements	Responsibility for uEMP implementation during first year of operation Undertake inspections and monitoring of environmental issues

Organi- zation	Roles and Responsibilities		
	Additional works Preparation	Additional works Implementation	Additional Operation
		Undertake inspections and monitoring of environmental issues during construction Coordinate environmental monitoring reporting to CPMU	during first year of operation Assist project owners to incorporate environmental requirements into infrastructure O&M procedures
District PCs	Approval of updated CEP in accordance with GOV legislative requirements	Monitoring implementation of uEMP through their own internal monitoring system	Monitoring implementation of uEMP through their own internal monitoring system
Environmen- tal Monitoring Consultant under LIC team	n/a	Implement independent environmental monitoring at subproject additional works area twice every 1 month. Monitoring results will be included in the report which will be sent to CPMU once a month.	n/a
District Subproject Support Teams (SST)	Assist in updated CEP preparation as required Assist PPMU to review bidding documents, contract documents, and tenders to ensure environmental issues are adequately addressed	Day to day supervision of contractors' in district including compliance with environmental management requirements Undertake environmental monitoring and coordination of local community environmental monitoring activities	Undertake environmental monitoring and coordination of local community environmental monitoring activities for first year of operation
Commune Supervision Boards (CSBs) and local community members ²	Involvement in consultation and participation activities to identify and develop subprojects Ability to comment on environmental assessment documentation upon disclosure	Involvement in environmental monitoring activities under the direction of SSTs	Involvement in environmental monitoring activities under the direction of SSTs
Constructio n contractor	n/a	Prepare detailed Site uEMP to meet the Subproject EMP general requirements	n/a

² CSBs have been established under Decree 80 Regulation for Participatory Investment Supervision. Article 8 of Decree 80 provides the community with opportunities to inspect compliance, monitor implementation and evaluate the results of investments in the commune, including environmental impacts.

Organi- zation	Roles and Responsibilities		
	Additional works Preparation	Additional works Implementation	Additional Operation
		Allocate adequate resources to meet the requirements and obligations of Site uEMP	

4.4 Monitoring and Reporting System

Table 7. Monitoring and Reporting System

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
Construction	uEMP of subproject	Once/ (first month since construction beginning)	Construction contractor	PPMU/CPMU
	uEMP implementation report of subproject according to report sample approved by ADB	Quarterly	CSC (to hold Environmental Supervision Consultant)	CPMU
	uEMP implementation report of province (syntheses of construction package) according to report sample approved by ADB	Quarterly	PPMU	CPMU
	uEMP Compliance Report indicating compliance with subproject EMP and monitoring results	Once/ 6 month	CPMU/LIC	ADB/AFD/DONRE
	uEMP completion report of each package/ subproject according to report sample approved by ADB	At completion of subproject	CSC (to hold Environmental Supervision Consultant)	CPMU
	Subproject completion Environmental Report indicating overall subproject environmental performance and EMP	At completion of subproject Additional Works	PPMU	CPMU

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
	compliance			
Operation	uEMP Compliance Report: Operation indicating compliance with subproject Additional uEMP commitments during operation	6 monthly for first two years of operation. Ongoing frequency to be determined based on review after 2 years.	Project owner/ Binh Thuan irrigation works exploring company	ADB, DONRE

4.5 EMP Budget

Table 8. Budget for uEMP implementation

Item	Preparation phase	Construction phase	Operation phase
Construction supervision consultant		Included in the contract with Binh Thuan PPMU	
Internal monitoring of Binh Thuan PPMU	Included in the project management cost of Binh Thuan PPMU	Include in the contract of CC, CSC and Binh Thuan PPMU management cost.	Binh Thuan Province and local budget
Implementing mitigation measures	The Additional Work preparation cost	Included in the construction contracts	Operation and maintenance cost
Monitoring uEMP implementation (undertaken by LIC)		Included in the contract between CPMU & LIC	
Public consultation and information disclosure	Included in the uEMP preparation consultant contract	Include in the contract of civil works, CSC and Binh Thuan PPMU management cost.	Operation and maintenance cost

5. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

5.1 Description of Activities to Date

During IEE preparation (from May to Nov 2014), the Public Consultation Meeting was held in Ham Thanh Commune – Ham Thuan Nam District of Binh Thuan Province on 6 August 2014 . Participants were representatives from the CPMU, PPMU, Commune People Committees, District Environmental Management Division, the Women’s Union, the Farmers ‘Union, Fatherland Front at commune level, and representatives from beneficiary and affected households in communes affected by the project. The meeting involved 41 participants, of which 31 of man and 10 of woman.

The objectives of the meeting were to inform the subproject information to authorities and local people of the main interventions of the North Ba Bau Main Canal Subproject and obtain the feedback from the participants on project implementation and obtain consensus on how to deal with environmental issues in the subproject area.

During uEMP preparation, two public consultation meetings were held in Ham Thanh and Ham Hiep Commune – Ham Thuan Nam District of Binh Thuan Province on 18 April 2017. Locations and number of participants is showed in the table below.

Table 9. Public consultation and public disclosure activities

CONSULTATION METHOD	DETAILS OF ACTIVITIES	
Adding lining canal period”: Two public consultation meetings are held on 18 th Apr 2017 at CPC of Ham Hiep and Ham Thanh Commune	Number of participants	Ham Thanh Commune Total have 20 people Man: 12 people Women: 8 people (the list of participants included in the minutes of consultation)
	Number of participants	Ham Hiep Commune Total have 22 people Man: 18 people Women: 4 people (the list of participants included in the minutes of consultation)

5.2 Opinions of participants

The people totally agreed with the additional canal section implementation of Ba Bau subproject as the additional work brings the benefits for agricultural production.

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.

The contractor was required to spray water during construction to avoid dust, especially when transporting materials across residential areas.

6. GRIEVANCE REDRESS MECHANISM

6.1 Purpose of the mechanism

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

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

- Stage 1: If a household has any grievance, he/she can submit it to the CPC-community monitoring board. CPC will work with CSC and CC to solve it.
- Stage 2: If the grievance is not redressed, it will be submitted to the District Division of Natural Resources and Environment to redress. DPC will work with PPMU to solve it.
- Stage 3: If more than 15 days pass without response from the DPC, the complainant may submit a grievance to the Binh Thuan PPC (through Binh Thuan DONRE). Binh Thuan PPC will require DPC to solve it. In case the grievance is still not redressed, Binh Thuan PPC will require environmental police to investigate and requested stakeholders to solve it. See the mechanism in figure below:

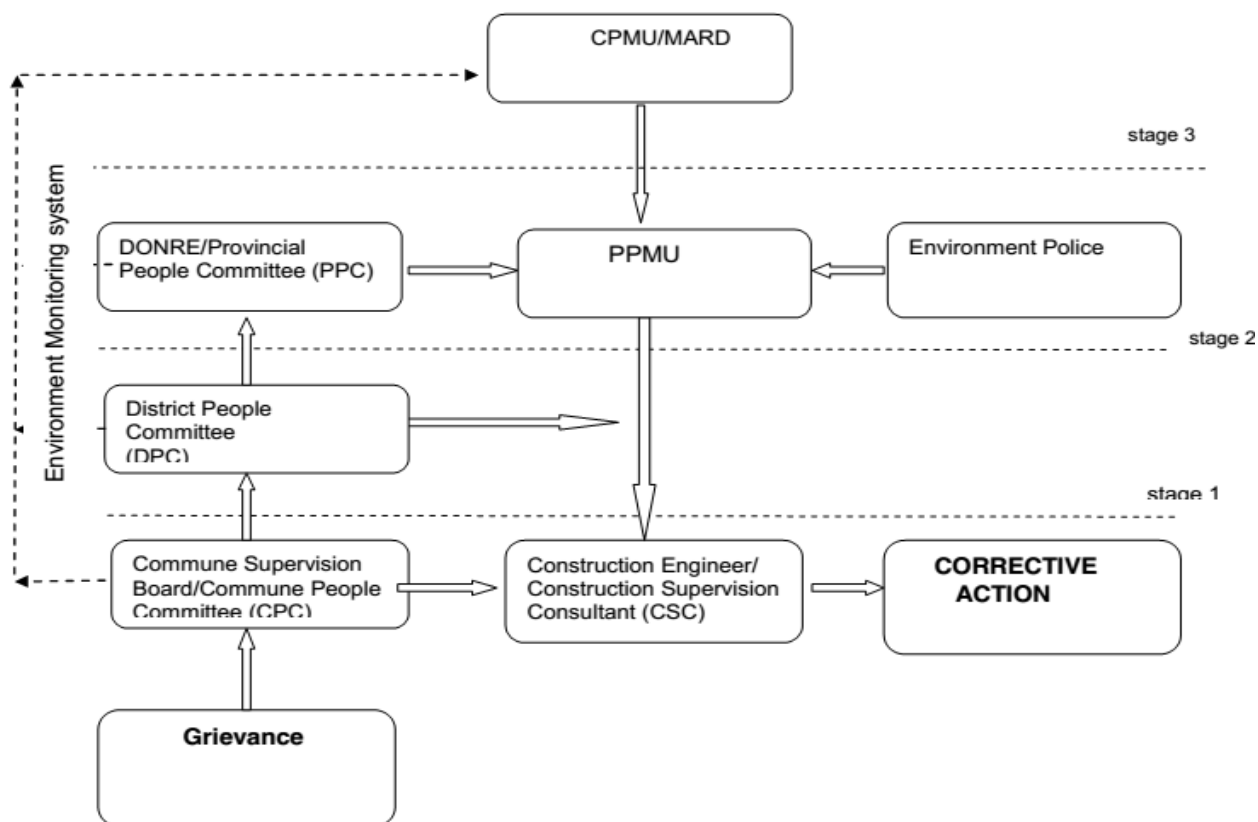


Figure 3: Grievance redresses mechanism

7. CONCLUSION AND RECOMMENDATIONS

- a. Lining additional canal section of north main canals of Ba Bau reservoir irrigation system will be implemented by Binh Thuan PPMU
- b. Updated environmental management plan implemented and main potential environmental impacts of subproject in construction stage
 - (i) Erosion or sedimentation caused by during clearing or earthworks
 - (ii) Dust and exhaust emission from construction equipment and machinery, material transport and material mixing. Pollution mainly occurred along transport route and at the construction site; it is necessary to have mitigation measures for negative impacts;
 - (iii) Noise pollution due to construction, motorbikes and material transport means;
 - (iv) Solid waste and liquid waste pollution from excavation, material mixing, residue of gasoline and lubricating oil from camps;
 - (v) Conflicts between agriculture (rice and dragon fruit) water supply for irrigation area and water supply stop;
 - (vi) Traffic disturb when transporting material and constructing the management /production road/canal embankment;
- c. Main potential environmental impacts in operation stage.
 - (i) Agriculture wastes (residue of vegetables, pesticide cover, straw of cultivation area) from the boundaries of the upgraded main canal have been focus at the canal bed, obstructing and polluting the flow;
 - (ii) Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water.
 - (iii) Risks of natural calamity due to Storm & flood occur during rainy season.
- d. Mitigation measures and construction monitoring for subproject, including the following main activities.
 - (i) Reduce soil erosion, sediment, land slide due to excavation, it is necessary to restore the vegetation covers, implement site clearance like planting grass, trees for shadow,
 - (ii) Minimize soil/water pollution, exhaust pollution, rubbish, and chemical substances during construction by methods like using equipment and vehicles in good conditions; erecting tents and latrines for workers in conformity with standard; implement cleaning and dredging at polluted areas, excavate to create holes for burying rubbish. If necessary, communities at downstream should be informed about water quality changes,
 - (iii) Dust, smoke and noise from construction equipment and vehicles: reduce the time and construction area/ transport vehicles, construction materials must be

covered by canvas; limit the noise from construction equipment at rush hours, at nights/labour safety devices for workers,

- (iv) During exploitation process, management authority should disseminate and consult the local authority/water users to limit the excessive use of water; establish regulated procedures and detailed water supply plan; update information year by year to inform users, implement dissemination and training on scientific irrigation to the community for understanding and implementation,
- (v) The Contractors do not transport materials at rush hours (6 am to 7 am; 11 am -12 pm; 5 pm- 6pm) and to be supposed to slow down speed when transporting materials in the residential area and to plan construction signposts and speed limit signs.
- (vi) Avoid deteriorating soil/water quality by fertilizer and pesticide through coordination and involving in agricultural extension programs, water management with community participation etc.

Monitoring measures

- (i) Contractor shall have methods and commitment on implementation of mitigation measures in aspects of both implementation location/mitigation measures/and frequency of implementation. Concurrently, the Contractor shall prepare detailed plan on environmental monitoring and mobilize enough manpower to meet general requirements and compulsory regulations on EMP.
- (ii) During operation stage, Project Owner (Irrigation Management Unit of work operation) should implement periodical management on water quality following current standards of Vietnam.
- (iii) PPMU should ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity
- (iv) PPMU Coordinate with Agriculture Extension Centre to ensure that farmers are trained on Integrated Pesticide Management (IPM).

2. Conclusion and recommendations

- Investment and construction of Consolidation of 6,854 m length of the main/primary canals of Ba Bau reservoir 's irrigation canal system is to promote the irrigation effectiveness of Ba Bau Reservoir, improve living standard and eliminate poverty for 2 subproject communes (added work area): Ham Thanh commune in Ham Thuan Nam District and Ham Hiep in Ham Thuan Bac District in beneficiary area (works area) with 11096 population of peoples and reducing natural calamity is an essential and urgent matter which helps bring significant economic effect and contribute to state-oriented agricultural and rural development. (from updated SIR Ba Bau)
- The results of environmental assessment in updated EMP presents that negative impacts during project implementation could minimize through

environmental management measures including monitoring programs. Negative impacts related to project is mainly from construction process and these impacts to be temporary and locally

- Based on uEMP, Consultants in updated F/S stage, PPMU would like to request functional Authority to give approval of uEMP for Consolidation of 6,854 m length of the additional main canal of Ba Bau reservoir's irrigation canal system to create basis for next implementation steps, ensuring the implementation progress, effectiveness and benefits of the project./.

8. ANNEXES

8.1 Annex 1. Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Ham Thanh for Additional lining canal section of the Ba Bau subproject

SỞ NÔNG NGHIỆP VÀ PTNT
BÌNH THUAN
BAN QLDA PTNT TỔNG HỢP
CÁC TMT-KHOẢN VAY BỔ
SUNG, TỈNH BÌNH THUAN

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

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

V/v: Nâng cấp, kiên cố hoá kênh chính Bắc Ba Bàu, huyện Hàm Thuận Nam
(Đoạn bổ sung kiên cố hóa kéo dài) thuộc Dự án "Phát triển Nông thôn tổng hợp
các tỉnh Miền Trung - Khuôn vay bổ sung", tỉnh Bình Thuận.

Hôm nay, vào lúc 8 giờ 30 phút ngày 18 tháng 04 năm 2017, tại UBND Xã Hàm
Thanh, huyện Hàm Thuận Nam, tỉnh Bình Thuận.

I. Thành phần buổi họp gồm:

**1. Đại diện Ban QLDA Phát triển Nông thôn Tổng hợp các tỉnh miền Trung-
Khuôn vay bổ sung, tỉnh Bình Thuận:**

- Ông: Hồ Minh Tương	Chức vụ: Phó Giám đốc.
- Ông: Nguyễn Hồng Trường	Chức vụ: CB Kỹ thuật.

2. Đại diện UBND xã Hàm Thanh:

- Bà: Nguyễn Thị Minh Truyền	Chức vụ: Chủ tịch xã.
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3. Đại diện bên tham vấn:
Gồm 20 hộ dân thuộc thôn Dân Thuận, xã Hàm Thanh, huyện Hàm Thuận Nam.

II. Nội dung tham vấn:

1. Phần trình bày của Ban QLDA tỉnh về các nội dung sau:

Trình bày sơ bộ dự án Phát triển Nông thôn tổng hợp các tỉnh miền Trung-
Khuôn vay bổ sung do Ngân hàng Phát triển Châu Á (ADB) và tiêu chí lựa chọn các
dự án thành phần đề xuất.

- Đề xuất dự án thành phần thực hiện tại địa phương là: Nâng cấp, kiên cố hoá
kênh chính Bắc Ba Bàu, huyện Hàm Thuận Nam (đoạn bổ sung kiên cố hóa kéo dài).
- Những lợi ích cũng như tác động về môi trường mà DATP mang lại là:

Đam bón tưới chủ động, ổn định cho 1.100ha, mở rộng vùng tưới cho 100ha đất
canh tác thuộc xã Hàm Thanh, huyện Hàm Thuận Nam; tiếp tục bổ sung cho hồ Cầm
Hàng tưới cho 250ha (chủ yếu là thanh long) và tạo nguồn cấp nước sinh hoạt bổ sung
cho thành phố Phan Thiết.

- + Dự án thành phần không ảnh hưởng đến phụ nữ và nhóm người dễ bị tổn
thương, không ảnh hưởng tiêu cực người dân bản địa.
- + Quy mô, giải pháp thiết kế dự án thành phần: Nâng cấp, kiên cố hóa kênh
chính Bắc Ba Bàu (đoạn bổ sung kiên cố hóa kéo dài) với chiều dài khoảng 7km và
Nâng cấp bờ kênh làm đường giao thông để thuận tiện cho việc đi lại, vận chuyển nông
sản của nhân dân cũng như thuận lợi công tác quản lý vận hành hệ thống.

2. Một số ý kiến của người dân tham gia buổi họp:

- Đồng tình với đề xuất của Dự án thành phần mà Ban QLDA trình bày tại cuộc
họp.
- Dự án thành phần này phù hợp với quy hoạch tổng thể của địa phương.
- Muốn sớm triển khai và đưa vào sử dụng để người dân được hưởng lợi.

hiện sẽ đem lại hiệu quả kinh tế cao, tưới hơn 325,5ha đất canh tác xã Hàm Thạnh, huyện Hàm Thuận Nam và tạo nguồn tưới mở rộng 250ha xã Hàm Hiệp, huyện Hàm Thuận Bắc góp phần thúc đẩy phát triển kinh tế xã hội.

- Địa phương cam kết thành lập Ban giám sát cộng đồng để hỗ trợ trong việc thu công công trình và phối hợp chặt chẽ với Ban QLDA để thực hiện dự án.

- Địa phương cam kết do dự án thành phần xây dựng trên nền hiện trạng nên không có đền bù, tái định cư và đề nghị dự án triển khai sớm.

3. Danh sách các hộ dân tham gia cuộc họp.

STT	Họ và tên	Chức vụ	Chữ ký
1	Nguyễn Thị Anh Thuận	Chủ tịch xã	
2	Nguyễn Văn Hùng	Trưởng thôn	
3	Trần Hoàng Tôn		
4	Nguyễn Văn Văn	Đại diện	
5	Nguyễn Văn Sơn		
6	Trần Thị Ngọc Mai		
7	Nguyễn Văn Hùng		
8	Lê Thị Cẩm		
9	Lê Minh Trọng		
10	Nguyễn Thị Xuân		
11	Lê Ngọc Chi		
12	Nguyễn Đức		
13	Nguyễn Thị Hồng		
14	Nguyễn Thị Thu		
15	Lê Ngọc Đa		
16	Lê Ngọc Hải		
17	Nguyễn Thị Mai		
18	Nguyễn Văn Hùng		
19	Lý Công Lộc	Chủ tịch xã	
20	Nguyễn Thuận Văn	Hội trưởng	
21			
22			
23			
24			
25			

Buổi tham vấn kết thúc vào lúc 10 giờ 30 phút cùng ngày. Biên bản tham vấn được lập thành 2 bản, UBND xã giữ 1 bản và Ban QLDA giữ 1 bản.

UBND XÃ HÀM THẠNH
 Chủ tịch

BAN QLDA

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Ham Hiep for Additional lining canal section of the Ba Bau subproject

SỞ NÔNG NGHIỆP VÀ PTNT
BÌNH THUẬN
BAN QLDA PTNT TỔNG HỢP
CÁC TMT-KHOẢN VAY BỔ
SUNG, TỈNH BÌNH THUẬN

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

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

V/v: Nâng cấp, kiên cố hoá kênh chính Bắc Ba Bàu, huyện Hàm Thuận Nam
(Đoạn bổ sung kiên cố hóa kéo dài) thuộc Dự án "Phát triển Nông thôn tổng hợp
các tỉnh Miền Trung - Khoản vay bổ sung", tỉnh Bình Thuận.

Hôm nay, vào lúc 14 giờ 30 phút ngày 18 tháng 04 năm 2017, tại UBND Xã
Hàm Hiệp, huyện Hàm Thuận Bắc, tỉnh Bình Thuận.

I. Thành phần buổi họp gồm:

**1. Đại diện Ban QLDA Phát triển Nông thôn Tổng hợp các tỉnh miền Trung-
Khoản vay bổ sung, tỉnh Bình Thuận:**

- Ông: Hồ Minh Tương	Chức vụ: Phó Giám đốc,
- Ông: Nguyễn Hồng Trường	Chức vụ: CB Kỹ thuật.

2. Đại diện UBND xã Hàm Hiệp:

- Ông: Lê Thành Minh	Chức vụ: Chủ tịch xã.
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3. Đại diện bên tham vấn:
Gồm 22 hộ dân thuộc thôn Xuân Diên và thôn Đại Lộc, xã Hàm Hiệp, huyện
Hàm Thuận Bắc.

II. Nội dung tham vấn:

1. Phần trình bày của Ban QLDA tỉnh về các nội dung sau:

Trình bày sơ bộ dự án Phát triển Nông thôn tổng hợp các tỉnh miền Trung-
Khoản vay bổ sung do Ngân hàng Phát triển Châu Á (ADB) và tiêu chí lựa chọn các
dự án thành phần để xuất.

- Đề xuất dự án thành phần thực hiện tại địa phương là: Nâng cấp, kiên cố hoá
kênh chính Bắc Ba Bàu, huyện Hàm Thuận Nam (đoạn bổ sung kiên cố hóa kéo dài).
- Những lợi ích cũng như tác động về môi trường mà DATP mang lại là:
Đảm bảo tưới chủ động, ổn định cho 1.100ha, mở rộng vùng tưới cho 100ha đất
canh tác thuộc xã Hàm Thạnh, huyện Hàm Thuận Nam; tiếp tục bổ sung cho hồ Cẩm
Hàng tưới cho 250ha (chủ yếu là thanh long) và tạo nguồn cấp nước sinh hoạt bổ sung
cho thành phố Phan Thiết.

- + Dự án thành phần không ảnh hưởng đến phụ nữ và nhóm người dễ bị tổn
thương, không ảnh hưởng tiêu cực người dân bản địa.
- + Quy mô, giải pháp thiết kế dự án thành phần: Nâng cấp, kiên cố hóa kênh
chính Bắc Ba Bàu (đoạn bổ sung kiên cố hóa kéo dài) với chiều dài khoảng 7km và
Nâng cấp bờ kênh làm đường giao thông để thuận tiện cho việc đi lại, vận chuyển nông
sản của nhân dân cũng như thuận lợi công tác quản lý vận hành hệ thống.

2. Một số ý kiến của người dân tham gia buổi họp:

- Đồng tình với đề xuất của Dự án thành phần mà Ban QLDA trình bày tại cuộc
họp.
- Dự án thành phần này phù hợp với quy hoạch tổng thể của địa phương.
- Nâng cấp tuyến kênh và đường bờ kênh là mong muốn của bà con nhân dân

hiện sẽ đem lại hiệu quả kinh tế cao, tưới hơn 325,5ha đất canh tác xã Hàm Thuận huyện Hàm Thuận Nam và tạo nguồn tưới mở rộng 250ha xã Hàm Hiệp, huyện Hàm Thuận Bắc góp phần thúc đẩy phát triển kinh tế xã hội.

- Địa phương cam kết thành lập Ban giám sát cộng đồng để hỗ trợ trong việc thi công công trình và phối hợp chặt chẽ với Ban QLDA để thực hiện dự án.

- Địa phương cam kết do dự án thành phần xây dựng trên nền hiện trạng nên không có đền bù, tái định cư và đề nghị dự án triển khai sớm.

3. Danh sách các hộ dân tham gia cuộc họp.

STT	Họ và tên	Chức vụ	Chữ ký
1	Lê Thanh Bình	Chủ tịch xã	
2	Trần Văn Cung	Thư ký xã	
3	Võ Văn Thù	Thư ký xã	
4	Lê Hoàng Nhàn	Thư ký xã	
5	Văn Thanh Kim Khánh	Vũ Văn Khánh	
6	Nguyễn Văn Trí	Phó trưởng thôn	
7	Lê Thị Kim Liên	Hộ gia đình	
8	Nguyễn Thị Thanh Thảo	Hộ gia đình	
9	Trần Ngọc Thạch	Công nhân xây dựng	
10	Nguyễn Quý Chấn	Hộ gia đình	
11	Phạm Ai	Hộ gia đình	
12	Văn Tấn Trường	Hộ gia đình	
13	Nguyễn Ngọc Thái	Hộ gia đình	
14	Nguyễn Văn Dũng	Hộ gia đình	
15	Nguyễn Văn Mai	Hộ gia đình	
16	Nguyễn Hữu Tấn	Hộ gia đình	
17	Nguyễn Hữu Cường	Hộ gia đình	
18	Phạm Ngọc Thái	Hộ gia đình	
19	Lê Văn Thanh	Hộ gia đình	
20	Nguyễn Văn Chính	Hộ gia đình	
21	Nguyễn Duy Hùng	Hộ gia đình	
22	Nguyễn Văn Thái	Hộ gia đình	
23			
24			
25			

Buổi tham vấn kết thúc vào lúc 16 giờ 30 phút cùng ngày. Biên bản tham vấn được lập thành 2 bản, UBND xã giữ 1 bản và Ban QLDA giữ 1 bản.

UBND XÃ HẠM HIỆP

BAN QLDA

8.2 Annex 2: Environmental mitigation measure to include into bid documents

Lining added canal section from Suoi Thi reservoir's intake K0+25,7m ÷ K6+880,04m of Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh Thuan province

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

Sub-project Activity	Potential impacts	Proposed Mitigation Measure
		<ul style="list-style-type: none"> ▪ Speeds shall be limited when the trucks pass residential areas to constrain dust flying in the wind which affect health and daily activities of the people living along the roads. The certain section route will be identified by SPC. Speed limitation signs shall be adequately installed within construction site and its regulation shall be remind to each driver by contractor. ▪ Soil scattered on the paved road and public road shall be removed immediately.
Sludge excavation, Worker camp establishment, Waste generation	Odour generation and in-sanitation condition	<ul style="list-style-type: none"> ▪ Excavation activities must be carefully scheduled to avoid the rainy season in order to ensure drainage of runoff water as well as sanitation for both local residents and workers; ▪ It is strong recommended that any intervention actions on the channels, it should be dewatered and dried before implementing excavation activities to reduce odour generation and in-sanitation condition and avoid polluting surface water quality. ▪ Construction waste need to be transported by adequate manners to use for levelling purpose at hollow areas along Bac Ba Bau main canal in Ham Thanh commune ▪ Domestic waste and garbage from construction site will be collected by hygienic manner. Provide dustbins at work site. ▪ Disposal of solid wastes into canals, stream, other watercourses, agricultural field and public areas shall be prohibited. ▪ Burning of construction and domestic wastes shall be prohibited. ▪ Toxic waste, if any, need to be collected, transported and treated according to the Circular No. 12/2011-BTNMT dated on 14/04/2011 of MONRE. ▪ Excavated sludge will be transported by specialized vehicles to avoid the leaking out of sludge on the transport routes. ▪ Before the construction activities completed, contractors have to carry out site clearance and environmental recovery, such as: <ul style="list-style-type: none"> + Transport of all unused materials from the site; + Remove all construction machine and equipment, temporary facilities, worksites; + Environmental recovery at the site such as provision of green trees, grass in both construction sites and disposal location in Ham Thanh, Ham Hiep Commune
Excavate activities and worker camp establish on sites...	Water quality impacts	<ul style="list-style-type: none"> ▪ Worksite, camps, material storage areas and load/unload construction material/waste activities must be located far from watercourse to ensure that materials will not be disposed into water, ▪ Excavation activities of drain items must be scheduled to avoid rainy to reduce suspended matters in runoff water entering the surrounding water bodies and existing canals; ▪ Provide adequate facilities in the site including latrines, holding areas and garbage cans. Waste from latrines will be collected and treated properly through an economic contract with local environmental co-operatives/companies. ▪ Cover material storage areas when raining is needed. Temporary storage of construction and domestic waste on the sites will be no longer than 24 hours. ▪ The placement of washing instruments/vehicles next to the water bodies, existing canals (identified in Water quality impact section)

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

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

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

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

*Lining Northern Ba Bau main canals of Ba Bau Reservoir irrigation system subproject, Binh Thuan province
Integrated Rural Development in Central Provinces Project*

Sub-project Activity	Potential impacts	Proposed Mitigation Measure
recovery	unsafety and sanitation condition to local people	approved sites Monitoring environmental recovery at: <ul style="list-style-type: none">▪ Construction waste disposal location▪ Material soil pit and borrow areas▪ Working sites Reinstate and ensure good condition for any effected public facilitates .