BINH THUAN PROVINCIAL PEOPLE'S COMMITTEE
DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

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DAM REHABILITATION AND SAFETY PROJECT (DRASIP)

REPORT
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Subproject: Repair and improvement for safety of River Quao
Binh Thuan Province

Binh Thuan, 5/2015

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VIETNAM DAM REHABILITATION AND SAFETY PROJECT (WB8)

REPORT

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SUBPROJECT: REPAIR AND IMPROVEMENT FOR SAFETY OF RIVER QUAO-BINH THUAN PROVINCE

Project Owner **Consultant Organisation**

Binh Thuan, 5/2015

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SUMMARY

1. The sub-projects *"Repair and Upgrading of Song Quao Reservoir"* is one of the sub-projects being proposed for funding under the World Bank-assisted Dam Rehabilitation and Safety Improvement Project (DRSIP). The objectives of the subproject are: (i) Increased flood protection of the reservoir, improved and modernized works to ensure long-term safety and stability in increasingly complex changes of the climate, in consistency with the objectives of national industrialization – modernization of the Party and State; (ii) Improved safety of headwork's of Song Quao reservoir, protecting people and assets of the community downstream.

2. Context: Song Quao reservoir is located in Ham Tri commune, Ham Thuan Bac district, 41 km far from sea. It was built in 1988 and completed in 1997. This is annual regulating reservoir, in dry season, it is supplied water from Dan Sach river under La Nga river basin, ensures water supply for 8120 ha of paddy field with irrigation level of P=75% and supply water for domestic use in project. Catchment area of reservoir is 296 km2, capacity of reservoir is 73x106 m3.

3. Head works and anxillary works of Song Quao reservoir include the following components:

Earthfill dam (main dam and sub- dam): homogeneous dam with cut – off trench:

- The length of left dam is 470m, and right dam is 416m; the altitude of dam crest is 92.0m (the maximum height of dam is 40m); width of top is 6,0m.
- Sub – dam 1, 2 and 3 with total length is 525m, the maximum height is 25m. The sub – dam 4 with elevation equal to natural elevation of 90.80m, so it is emergency spillway instead of dam in case of large flood;

Outlet works intake: is located in sub dam 1 and is reinforced concrete works with rectangular cross – section; dimension BxH is (2x2.5) m;

Spillway: reinforced concrete structure, with 3 curves – gateS (6x 8m), connecting to chute and dissipation of energy in form injecting form;

Dan Sach weir: its task is supply water for Song Quao reservoir from Dan Sach stream as well as this construction has to ensure releasing water into Dan Sach stream in order to avoid increasing flood in Song Quao reservoir

4. Current status of head works: asphalt concrete penetrated for crest reinforcement has deteriorated, much peeling and subsidence appeared on the dam crest, downstream ledge has been deteriorated or damaged in some segments. Concrete of the dam face has been mostly cracked along the crest. Due to waves, dam upstream slope has slagged down, stone pavement is of disportion, dam slope is waved, rugged and less beautiful looking. The downstream slope has many positions eroded by surface water, ditches and up/down thresholds mostly under damage; the dam slope is rugged and less beautiful looking; Dan Sach weir: Due to the impact of rainfall, the dam up/downstream slopes are annually eroded and degraded with bushy plants growing on the dam body. There is seepage and deep erosion at downstream to the left.

Impact due to releasing water of Song Quao reservoir: downstream area is fertilizer delta of Ham Thuan Bac with high population density and there are main traffic route such as North - South railway, National highway 1A, and it is about 8 -10km far from construction and 20 km far from Phan Thiet city. The communes along Quao river will be impacted directly by flood, of which some households living in flood releasing corridor will be affected directly. According to the survey in 2015, the influence aea due to releasing water from Song Quao reservoir includes 7 communes with 4 ethnic groups of Kinh, Gialay, Khơ me, Tày. Total estimated households to be affected directly are approximately 4963 households.

5. Description of project's activities: (i) Reinforcing dam crest (main dam and sub – dam) with concrete; improving downstream and upstream slope; installing seepage monitoring equipment in dam ; (ii) New construction of the second spillway with reinforced concrete grade M200; (iii) Dan Sach weir: covering weir and upstream slope by reinfroced concrete; constructing regulating culvert at the starting point of diversion canal in order to prevent flood from Dan Sach river going in Quao river; (iv) Repairing and improving construction road and management road no.1, 2, 3, 4, 5 with total length of 5.12 km.

6. Sub-project environmental and social impacts screening: River Quao reservoir sub-project has related to the project category A characteristics, The sub-project requires repair and upgrade a large dam: Earth fill dam on rock basement (type A) 40meters height. It is not located within or near any sensitive environment or natural habitat and there are no structures or sites in the area of cultural and historical significance that will be impacted by the rehabilitation. Survey results showed that no ethnic minority households are affected either by land acquisition or adverse effects resulted from project implementation

7. Impacts on environment, society and mitigation measures: in short - term the project implemented will recover the situation of deterioration of components of works. In long – term, the project will improve dam safety, stability; the leveling up of construction will decrease risk of damage to downstream area, increase effectiveness of construction and sustainable development of water resources of Song Quao reservoir basin. However, the project implementation will be results of some potential adverse impacts and risks of natural and social environment, relating to: (i) Land acquisition and clearance, (ii) construction activities, and (iii) operation of the reservoir.

8. Plan of prevention or mitigation is performed in detail in Environmental and social management plan (ESMP)

Construction phase may cause the negative impact on natural environment (increasing air, surface water, ground water pollution, noise and vibration, etc) and social (traffic congestion, social security,etc). However, these impacts are local, temporary, in small scale and they can be mitigated and prevented through:

- Follow Environmental and social management plan of project;
- Consult with local authorities and local people from pre – construction phase and remain during implementation time of project;
- Monitor closely implementation of the project.

9. Institutional Arrangements: Central Project Office (CPO) takes responsibility for supervision overall project and progress of the subproject: *"Repairing and safety improvement of Song Quao reservoir subproject"*, including the implementation of environmental protection measures proposed in ESMP.

Binh Thuan irrigation exploitation one member Ltd. company takes responsibility for preparing detail bids/tenders information, selecting contractor suitably, preparing contracts and ensuring effective implementation and close supervision of ESMP of project. The contractor takes responsibility implementing project as planned, periodically report to CPO. CPO will associate closely with local authority to ensure the effectiveness of stakeholder consultation and promote minimized measures effectiveness. Department of Natural Resources and Environment of Binh Thuan province will bear responsibility of supervising the implementation of environmental policies as per regulated by Vietnam Government. After project completed, the operation organization will take responsibility of maintenance and periodic inspection project's works.

10. Social and Environmental impact assessment consultation: In ESIA preparation of Repair and Improvement for Safety of River Quao reservoir – Binh Thuan Province, consultation

rounds with local communities and communes were carried our (Social and Environmental impact assessment consultation). The results of community consultation: All participants participated in the meeting agreed to implement the sub-project, because it will be ensured to handle the of River Quao sub-project, in good condition. Binh Thuan Irrigation exploitation commitments to: Commit to follow the proposed mitigation measures that mentioned in ESIA report of the sub-project ; Commit to keep good contact with local authority to manage worker on site and reduce conflict between worker and local resident, reduce traffic accidences in the local, etc; Ensure sufficient water supply to resident and irrigation; Commit to pay the compensation of affected local infrastructures, road in accordance with the policy of the World Bank and the Government of Vietnam.

11. Budget allocation: Both ODA fund and Counterpart fund of Vietnam Government are used for sub-project investment. Total budget estimation is: **VND 271,702,000,000**. The total estimated cost of the sub-project including implementation of the ESMP is **VND** 2,246,000,000**.**

PART 1: INTRODUCTION

1.1 General information of the project

DRSIP is intended to improve the safety of the dams and related works, as well as the safety of people and socio-economic infrastructure of the downstream communities as defined in Decree 72 - governing the management of dam safety in Vietnam. . The project will consist of the following components

- Component 1: Dam safety rehabilitation (US$ 385 million
- Component 2: Dam safety management and planning (US$ 60 million)
- Component 3: Project management support (US$15 million)
- Component 4: Disaster contingency (US$ 0 million - no fixed allocation, but not to exceed 20% of the total project cost)
- Implement agencies

DRSIP will be implemented in 31 provinces in the North, Central and Highland regions. Up to 400 dams will be selected for consideration under the project with and will be based on an a priori agreed selection criteria aimed at prioritizing those interventions that address the risks within an explicit poverty and inequality framework**.**

The proposed project will be implemented over a period of six years – from December 01st, 2015 to December 01st , 2021. The draft Environmental and Social Impact Assessment (ESIA) of the first year subproject and the project Environmental Management and Social Framework (ESMF) will be ready by May 12th , 2015 for disclosure. These safeguard documents need to be cleared by the Bank before the disclosure. The EIA of the subsequent years' subprojects will be prepared once the EMF has been agreed by the Government of Vietnam and the World Bank.

The Ministry of Agriculture and Rural Development (MARD) will be responsible for overall implementation and management of the project. The Central Project Office (CPO) within MARD would provide the support to all the three Ministries and responsible for overall coordination and monitoring of the project. The implementation of the rehabilitation works and preparation of dam safety plans, including safeguard and fiduciary, would be decentralized to the provincial level authorities. The provincial Department of Agriculture and Rural Development (DARD) would be lead agency at the provincial level. Provincial project management unit (PPMU) of DARD in each province will response to manage and monitor the sub-project under MARD supervisor

The project will support the physical rehabilitation of the existing irrigation dams most of which were built during the 1980s and 1990s. About 90% of the dams to be rehabilitated are earthen structures and are considered as small dams with height of less than 15m and design volume of less than 3 million cubic meters (MCM). The proposed project is not intended to support significant structural modifications or expansions beyond what is needed to ensure safety. The rehabilitation will be limited to reshaping of the main and auxiliary dams, slope stabilization by either concrete slab or in-situ or stone paving, strengthening or expansion of existing spillways to increase the discharge capacity, refurbishment of existing intake structures, replacement of mechanical and electrical systems of intakes and spillways, grouting for seepage control and improvement of existing roads (access and management roads)

1.2 Approaches and methodology for environment assessment

Objective of environmental impact assessment:

- The general objectives of ESIA is to carry out the environmental and social assessment of this specific sub-project, including the preparation of the relevant safeguards instruments that are deemed required to meet the requirements of the Government Socialist Republic of Vietnam and the World Bank.
- Specific objectives of ESIA includes i) assessing the social and environmental impacts of the proposed rehabilitation head works on the Song Quao Reservoir, ii) Formulating environmental and social management plan (ESMP) and monitoring plan (ESMoP) including appropriate monitoring, supervision and reporting mechanisms, iii) Creating communication channels to allow local communities to involve the decision making process.

Scope of environmental impact assessment:

- Areas of influence of the Sub-project: There are two effected areas that could be considered: (i) The construction sites - The areas of influence by the proposed sub-project implementation: the main construction area at the dam, intake culvert, spill way; borrow pits and quarries, construction materials storage areas, machinery and equipment parking areas, temporary and permanent waste and wastewater disposal sites, construction workers camps, access road areas to the dam sites, borrow pits and quarries, disposal sites, the reservoir including the boundaries affected by water levels in the reservoirs, downstream channels, etc. (ii) The benefited areas – There are the areas that would benefit from the sub-project, including Ham Tri, Thuan Hoa, Ma Lam, Ham Chinh, Phu Long (Ham Thuan Bac district) and Phu Hai ward (Phan Thiet city).
- The impacts assessment by the proposed project implementation over time. The assessment of environment and social impacts assessment by the different phases of the proposed sub-project implementation and the cycle of the project such as i) preparation (site clearance), ii) construction and iii) operation phase. In additional, the report is also considered and reviewed to history of the dam operation, issues or risks that's happened in the past and its impacts to the physical environment, social and the proposed mitigation measures that could be applied.

The assessment consideration:

- Physical environment and its components (climate condition, water resources, soils, mineral, biological systems), socio-economic and cultural and social aspects.
- Impacts assessment should consider to: a) physical environment (water resources, hydrology, air/water/soil pollution, erosion and sedimentation, drainage, safety for stakeholders and existing infrastructure, taking into account the baseline conditions such as climate, geography, topography, air qualities), b) historical, cultural and archaeological issues; c) biological systems such as flora and fauna, natural habitats, aquatic life, etc. and d) social environmental (socio-economic and social aspects such as health and health care, job and incomes, gender issues, social safety and stability, accessibility to basic services such as water and power supply, health and education etc.).

Approaches:

- ESIA should incorporate with financial analysis, relies on the basis of the institutional frameworks and technically project design, ensure that all environmental and social criteria will be protected properly (addressing location of the project and the techniques will be applied)
- Quantitative the significance impacts are as much as possible and should be clearly defined to the sub-project on environmental and social.
- ESIA will predict, assess and distinguish all significant impacts, such as the pairs of positive-

negative impacts, direct-indirect, cumulative impacts, immediate and long-term impacts and reversible non-reversible (adverse) impacts that the sub-project is likely to generate.

Method:

- *Survey and field investigation*: Consultancy Unit conducted 2 field surveys: (*1st phase*) from February 3rd, 2015 to February 13th, 2015 and from February 16, 2015 to February 24, 2015.
- *Sociological survey:* interview 105 households(who were affected directly and indirectly, benefit) Ham Tri, Thuan Hoa, Ma Lam, Ham Chinh, Phu Long (Ham Thuan Bac district) and Phu Hai ward (Phan Thiet city) and 23 local leaders in the level of commune/ ward and city.
- *Statistical method*: Data collection, processing and analysis: (i) the meteorological, hydrological and environmental data for many years in the project area; (ii) The reports and data on the socio-economic and gender in 3 consecutive years of Ham Tri, Thuan Hoa, Ma Lam, Ham Chinh, Phu Long (Ham Thuan Bac district) and Phu Hai ward (Phan Thiet city)
- *Inherited method:* Inherit the research results of the relevant projects.
- *Expert method:* Consultancy unit participated and organized the meeting, the exposure to take comments on proposed measures to mitigate the negative impacts of the subproject of environmental experts, sociological experts, dam safety experts and gender experts.
- *Analytic and synthetic method:* Analyze and synthesize the impact of the project on the components of the natural environment and socio-economic at the operational area of the project.
- *Rapid assessment method:* Use the pollution factors of the World Health Organization (WHO) to estimate the amount of waste and pollution forecasting.
- *Comparison method:* the impacts are evaluated by comparison with the norms and standards for the quality of soil, water, noise, air and other relevant environmental standards.
- *Matrix method*: To compare each activity of the project with each parameter or environmental and social component (air, water, health, economic, etc.) to assess the relationship of cause-consequences of the subproject implementation

1.3. Approaches and methodology for social assessment

Objectives:

The purpose of this social assessment (SA), conducted in an integral manner with environmental assessment for this subproject, is two-fold. First, it examined the potential impacts of the subproject –positive and adverse impact –on the basis of planned project activities. Second, its findings inform the design of measures addressing identified potential adverse impact and proposing community development activities that are relevant to the project development goal. For identified adverse impact that could not be avoided, consultation with local people, governmental agencies, project stakeholders, etc., were carried out to ensure affected peoples will be appropriately compensated for, and supported in a manner that their socioecononmic activities will be promptly and fully restored to the pre-project level, at least, and that their livelihoods will not be worsen off, in the long run, as a result of the subproject.

A gender analysis was also done as part of the ESIA to understand underlying gender dimensions (from project impact perspective) to enable gender mainstreaming to promote gender equality, and enhance further the development effectiveness of the subproject, and the project as a whole. Depending on the magnitude of the identified potential project impact, and the project development objective, a gender action plan and gender monitoring plan were prepared (please see these plans in the Appendix B4 of this ESIA)).

Methodology:

To ensure all potential impact could be identified during project preparation, the SA was conducted through series of consultations with various project stakeholders. A particular focus was maintained on households who are potentially affected (both positively and adversely). The research techniques employed for this SA include 1) review of secondary data, 2) field observations; 3) focus groups discussions/ community meetings, 4) key informant interview, and 5) households survey. Number of households participated in consultation are 151 households, of which 18 affected households in case of resettlement (socio – economic survey combination with base damage inventory) and 133 households who are befinited and affected by releasing water by project (socio – economic survey), 73 households at Ham Tri commune and 60 households at Thuan Hoa commune. In 18 affected households, there are 10 households who are lost their house and 8 households who are lost production land.

In section V, we will present the findings of the SA (positive and positive impact), including the result of the gender analysis. In section VI, we will briefly state the results of SA, along with the recommendations on the basis of the SA results. Please note that a gender action plan and gender monitoring plan are presented at Appendix B4 of this ESIA), and the public health intervention plan and public consultation and communication plan were presented at Appendix B2 and B3, respectively). Complaint settlement proess were presented at Appendix B5

1.4 Subproject owner and investment cost

Subproject owner: Binh Thuan exploiting irrigation works One member Company, Ltd.

Address: 127 Le Hong Phong, Phan Thiet City, Binh Thuan Province.

Tel: 062.3828.528 Fax: 062.3823.286

Total investment cost:

Total cost for the project implementation: VND **271,702,000,000**. Of which implementation costs for each items are summarized in Table 1.1:

Table 1.1: Summary of costs for major items

Unit: VND

No.	***Contents***	***Value***
1	Cost of construction	178,990,562,000
2	Cost of equipments	10,548,054,000
3	Cost of compensation for resettlement	8,821,000,000
4	Cost of project management	2,602,012,000
5	Cost of consultant	14,357,597,000
6	Cost of mitigation measures implementation	1,113,000,000
7	Cost of environmental monitoring	1,803,000,000
8	Programs support to building capacity and technique on environmental management	330, 000, 000
9	Other cost	5,287,009,000
10	Reserve cost	47,759,707,000
	Total	**271,702,000,000**

Source: Investment project report (2015)

1.5 Conusltant organisation

Organisation name: Institute for Water and Environment (IWE)

Contact person: Dr. Doan Tuan, Doan Position held: Director

Address: 165/2, Chua Boc street, Dong Da district, Hanoi

Tel: 84-43563.4809 Fax: 84-43563.4809

Table 1.2: List of expert involve to ESIA report

No	*Name*	*Qualification*	*ESIA's position*
1	Nguyen Duc Phong	Msc of hydrology	Team leader
2	Bui Thi Ban Mai	Msc of environment	Environmental expert
3	Nguyen Thanh Hung	Doctor of hyfrology	Hydrology expert
4	Vu The Hai	Doctor of water resources	Dam safety expert
5	Dang Thi Bao Khanh	Master of social	Social expert
6	Nguyen Xuan Thanh	Doctor of biology	Biological expert
7	Doi Van Manh	Engineer of water resources	Secretary, translator
8	Truong Thi Tam	Msc of environment	Assistant staff

PART II: SUBPROJECT DESCRIPTION

2.1 Overview

a) *Subproject name:* Improved safety of Song Quao Reservoir – Binh Thuan Province

The physical location of Song Quao reservoir is longtitude (north) $11^0$10'23'' and latitude (East) $108^0$8'26'', in Ham Tri commune, Ham Thuan Bac district. The reservoir is built in 1988 and completed in 1997. Song Quao reservoir is year regulation reservoir, in dry season, water is supplied from Dan Sach river under La Nga basin, which ensure water supply for 8120 ha of paddy field with P=75% and supply water for domestic use. Song Quao reservoir is level II construction, area of Song Quao catchment is 296 km^2; Capacity of reservoir is $73x10^6$ m^3; Area of water surface is (corresponding with normal water level) 6.8 km^2; the highest elevation of dam is 40m.

b) Subproject objectives

- Increased flood protection of the reservoir, improved and modernized works to ensure long-term safety and stability in increasingly complex changes of the climate, in consistency with the objectives of national industrialization – modernization of the Party and State.
- Improved safety of headwork's of Song Quao reservoir, protecting people and assets of the community downstream.

c) Location of project implementation:

The headwork area locates on Quao River, in Ham Tri commune, Ham Thuan Bac District, 35km away from Cai river downstream junction, 0.6km away from NR28 (Phan Thiet – Di Linh) and about 41km away from the estuary. Project beneficiary area is the largest delta area of Binh Thuan Province, spreading from Ham Tri commune to Phan Thiet City; Elevations of the beneficiary area are quite different: from elevation +50m to the West-Northwest progressively down to elevation+5 – 10m to the East – Southeast. The total natural area is around 20,724ha.(see figure 2.1).

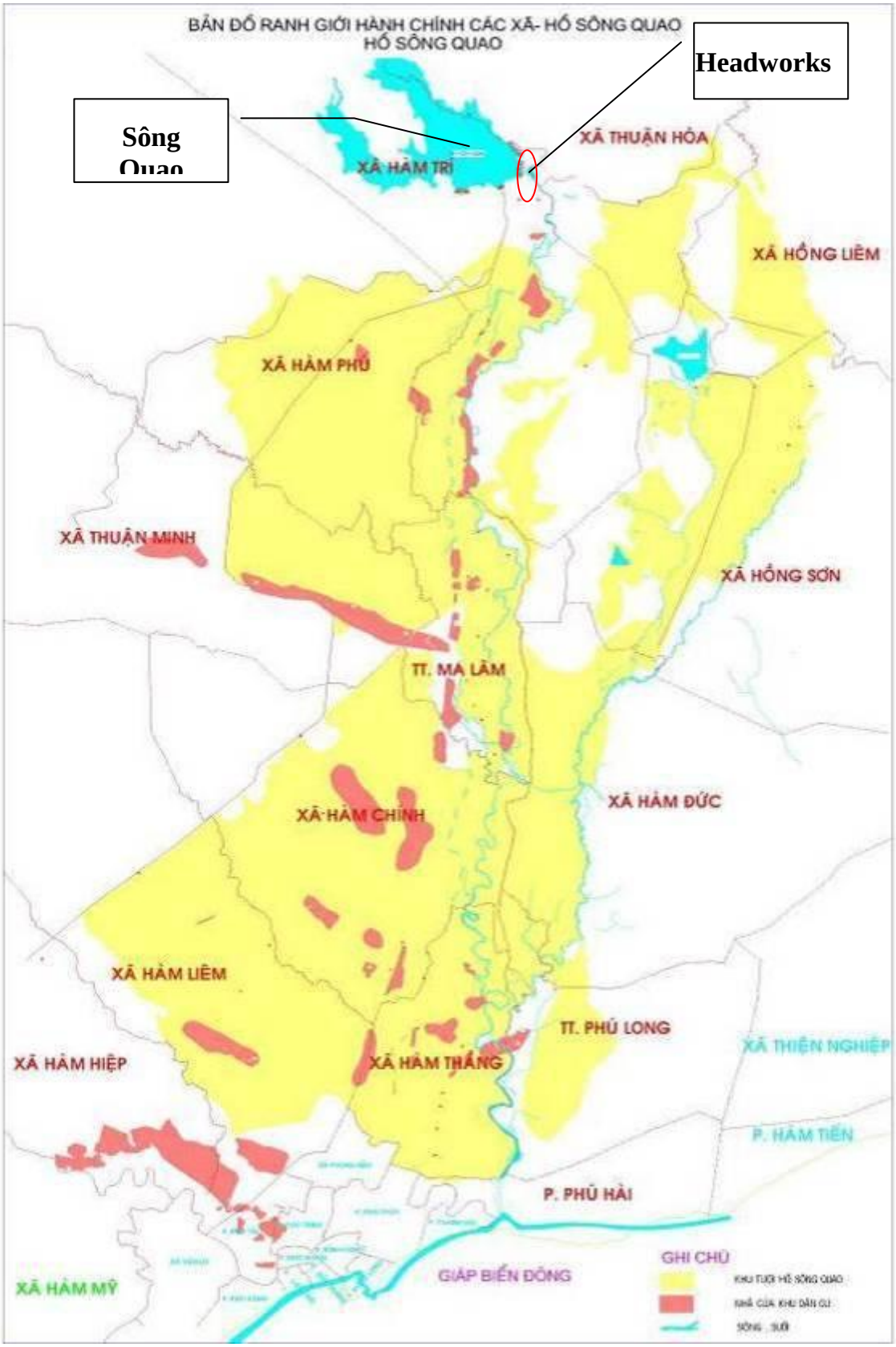

Figure 2.1: Geographical location and project beneficiary area

2.2 The proposed scope of work

2.2.1 Dam

Main dam, asphalt concrete penetrated for crest reinforcement has deteriorated, much peeling and subsidence appeared on the dam crest, and downstream ledge has been deteriorated or

damaged in some segments. Concrete of the dam face has been mostly cracked along the crest. Due to waves, dam upstream slope has slagged down, stone pavement is of disportion, dam slope is waved, rugged and less beautiful looking. The downstream slope has many positions eroded by surface water, ditches and up/down thresholds mostly under damage; the dam slope is rugged and less beautiful looking. The permeability observation system through dam body and base has lost its effect then it's impossible to observe the saturation inside the dam body (Figure 2.2 – 2.5).

Figure 2.2:Dam crest of Song Quao Reservoir under deterioration and degrade

Figure 2.3 Subsidence of the main dam - Song Quao Reservoir

Figure 2. 4: Seriously damaged surface of the main dam - Song Quao Reservoir

Figure 2. 5: Peeled surface of the main dam - Song Quao Reservoir

- **Repairing main dam (02 branchs):**

  - Dam crest: demolish the current parapet wall (elevation of top +93.50m). Building a new reinforced concrete parapet wall with heigh of 1m, reinforcing dam surface by reinfroced concrete grade M200.
  - Upstream slope: Upper banquette 82.0: Peeling the displaced riprap, reusing and filling a layer of crushed stone with average thickness of 5cm, making new riprap layer with thickness of 25cm; Lower banquette 82.0: Peeling totally the old riprap (lower banquette 82.0 riprap was totally damaged), reusing, filling a layer of crushed stone with thickness of 5cm, making a new riprap layer with thickness of 30 cm.
  - Downstream slope: Peeling slope surface with thickness of 30 cm, filling fertilizer soil to plant grass for strengthening; building a drainage system on slope surface with reinforced cells (5x5) m grade M 150.

- Downstream banquette: extending to 6m, covering surface by crushed stone grade I with thickness of 25 cm.
- Drainage grid system on slope surface, terrace: demolishing the old riprap, make a new one by concrete grade M 150 casting in place.

Sub-dam No.1and No. 3. Concrete on the crest is at a slight peel-off, the upstream slope stone pavement is peeling here and there, MN zone is under disportion and subsidence and sagging. On the downstream slope, topsoil layer is eroded to gravel layer, grass cannot service leading to erosion of downstream slope due to rain water impacts.

Figure 2.6*: Peeled pavestone of the subdam upstream slope*

Figure 2.7*: Subdam downstream slope eroded by rain*

Figure 2.8: Subdam downstream slope subsiding and sagging

Figure 2.9: Damanged drainage ditch (subdam downstream slope)

- **Repairing sub – dam No. 1 and No.3:**
  - Top of dam: reinforcing dma surface by reinforced concrete grade M200; building a new parapet wall with reinforced concrete grade M 200.
  - Upstream slope: Peeling the displaced riprap, reusing and filling a layer of crushed stone with average thickness of 5cm, making new riprap layer with thickness of 25cm remaining crushed stone layer.
  - Downstream slope: Peeling slope surface with thickness of 30 cm, filling fertilizer soil to plant grass for strengthening; building a drainage system on slope surface with reinforced cells (5x5) m grade M 150.
  - Downstream banquette (sub - dam 1): re – filling to width of 4 m, covering banquette's surface by crushed stone grade I with thickness of 25 cm.
  - Drainage grid system on slope surface, terrace: demolishing the old riprap, make a new one by concrete grade M 150 casting in place.

Dan Sach weir, functions to direct water from Dan Sach stream catchment to run to Song Quao catchments and supply water for Song Quao reservoir for irrigation, while ensuring flood drainage to Dan Sach stream as not to increase flood in Song Quao Reservoir. Due to the impact of rainfall, the dam up/downstream slopes are annually eroded and degraded with bushy plants growing on the dam body. There is seepage and deep erosion at downstream to the left.

- **Rehabilitation of Dan Sach weir's constructions:**
  - Spillway: covering surface by reinforced concrete with grade of M200, thickness of 20 cm; elevation of +435.00m, building side wall and downstream of spillway with concrete.
  - Filling soil at two sides of spillway: totally excating, excavating cut – off trench to impermeable layer, filling dam crest to elevation of +4 38.00m in order to ensure safety for dam in case of flood, reinforcing slope and dam crest .

2.2.2 New construction of spillway No. 2

To ensure the safety of reservoirs in climate conditions (under Article 3.2.4 of QCVN 04-05: 2012), the consultant has proposed upgrading works of the Song Quao from level II to level I. Therefore, in order to ensure dam stability conditions under Categories I, expanding the scale of spillway is necessary: the solution is to build new spillway no. 2 in order to ensure water drainage in case of occuring large flood (decreasing desiged flood water level corresponding flood with frequency of P = 1% under the old design of works grade II, still ensure dam stability without increasing height of dam), to ensure safety for downstream areas. This is also the beneficiary area of subprojace, including 7 communes in downstream area (Ham Thuan Bac district with area of 39, 815 ha). The scale of spillway no. 2 as follows

- Spillway with gate: 01 curve gate (bxh) = (8x5) m operated by hydraulic cylinder, reinforced concrete structure.
- Works on corridor behind spillway: 02 discharge culver, ensuring safey water releasing with discharge of $30m^3/s$, reinforced concrete structure.

2.2.3 Repairing construction and management road

The current management road is covered with crushed stone with asphalt: local treatment for damaged section; covering a layer of concrete asphalt with thickness of 8cm, re – building drainage system at road

Figure 2.10: Service road for main dam, spillway and sub – dam 1

Figure 2.11: Service road for sub – dam 3

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Table 2.1: Statistics of items to be repaired and upgraded under the subproject

No.	*Items*	*Description*	*Implementation volume*	*Measures*
1	Main dam (including left branch and right branch)	• Dam crest: reinforce with concrete of 20cm thick, edged downstream; new wave protection wall of 1m high; • Upstream slope: remove the old paved stones in disportion, rugged parts; reuse, add a filtering macadam layer of average 5cm thick to make flat, repave stone of 25-30cm thick • Downstream slope: Remove the river bed gravel sandy layer, embank with rick soil to cover grass to protect the surface, expand the dam banquette by 6m according to its design section; build a ditch system for surface water drainage and plant grass for dam protection Installation of equipment to monitor seepage inside the dam body, 3 sections are laid out for each dam branch	• Volume of excavated soil: 55,702 m^3; • Volume of filled soil: 52,186 m^3; • Concrete : 2,784 m^3; • Stone: 18,887 m^3	• Excavation of dam repair items mainly by hand combined with machines • Reinforced concrete to strengthen dam upstream slope, ditches, stairs to be made manually combined with mechanical pear mixer 250l + face ramming; • Stone work: mainly by hand
2	Subdam No.1 and No.3	○ Dam crest: reinforce with concrete of 20cm thick, edged downstream; new wave protection wall of 1m high; ○ Upstream slope: remove the old paved stones in disportion, rugged parts; reuse, add a filtering macadam layer of average 5cm thick to make flat. Filtering sandy macadam crush layer underneath stays unchanged; ○ Downstream slope: Remove the river bed gravel sandy layer,	• Volume of excavated soil: 12,981 m^3; • Volume of filled soil: 4,197 m^3; • Concrete: 2,200 m^3; • Stone: 4,862 m^3; • Sand: 66 m^3	• Excavation of dam repair items mainly by hand combined with machines • Reinforced concrete to strengthen dam upstream slope, ditches, stairs.. to be made manually combined with mechanical pear mixer 250l + face ramming; • Stone work: mainly by hand

No.	*Items*	*Description*	*Implementation volume*	*Measures*
		embank with risk soil to cover grass to protect the surface, expand the dam banquette by 6m according to its design section; build a ditch system for surface water drainage and plant grass for dam protection; • Installation of equipment to monitor seepage inside the dam body.		
3	Spillway no.2 (new construction)	• Build the spillway no.2 with RC M200, pragmatic threshold, with 1 arch gate compartment, spillway threshold elevation of +84.0m	• Volume of excavated soil: 240 m^3; • Volume of filled soil: 2,370 m^3; • Concrete: 2,797 m^3; • Stone: 23,517 m^3	• Soil and rock excavation of the spillway no.2 with machines, digging soil by excavators + transporting by trucks to the dump site, digging rock by explosion; • Concrete work: using batching of 20-30m3/h, trucks for transportation, cranes, needle and surface vibrators and for concrete making, pumps as for basement concrete
4	Dan Sach irrigation works cluster (to be repaired, upgraded)	• Spillway: Coating to strengthen the dam body with RC M200, 20cm thick, spillway threshold elevation of +435.0m. • Earth dams on 2 heads of the spillway: heightened embankment, structural application according to the design sections, strengthen the upstream slope with RC, 15cm thick, plant grass for dam slope protection. • Build a regulator at the canal head to prevent flood from Dan Sach river into Song Quao reservoir;	• Volume of excated soil: 4,208 m^3; • Volume of filled soil: 8,249 m^3; • Concrete: 2,772 m^3; • Stone: 894 m^3; • Sand: 547 m^3	• Soil embankment mainly by machines, or jumping rammer for a number of items • Using in-place pear mixer V250l, needle rammer to make concrete of Dan Sach dam

No.	*Items*	*Description*	*Implementation volume*	*Measures*
		the regulator is to be built with RC M200, 2 gates,		
5	Management routes (to be repaired, upgraded)	• Repair, upgrade construction route and management routes no.1, 2, 3, 4, 5 with total length of 5.12 km: Rural traffic road – grade V	•	• Asphalt concrete pavement: hot asphalt concrete mixer, transporting by truck, leveling and ramming with dedicated traffic equipment; • Soil embankment mainly by machines, or jumping rammer for a number of local items
6	Management house (to be upgraded)	• Build 2-floor management house for headwork management, total area of 475m^2; make surrounding fence and campus. • Reorganize the spillway management and operation house	•	• Construction mainly by hand

Table 2.2 below summarise the key parameters of the four main work items before and after the project. Technical parameters of construction do not change after repairing

Table 2.2: Technical Parameters of current construction before and after upgrade

Technical	*Unit*	*Current status*	*After repairing*
1. Reservoir			
- Total capacity	m^3	73.0×10^6	73.0×10^6
- Total effective capacity	m^3	67.3×10^6	67.3×10^6
- Death capacity of reservoir	m^3	5.7×10^6	5.7×10^6
2. Main dam			
- Elevation of dam crest	m	92.7	92.7
- Elevation of parapet wall	m	93.7	93.7
- total length	m	886	923
- Height of dam	m	40	40
- Width of top dam	m	6	6
3. Sub – dam No. 1: Repairing			
- Elevation of dam crest	m	92.7	92.7
- Elevation of parapet wall	m	93.7	93.7

Technical	*Unit*	*Current status*	*After repairing*
- Total length	m	150	150
- Height of dam	m	25	25
- Width of top dam	m	5	5
4. Sub – dam No.3: Repairing			
- Elevation of dam crest	m	92.7	92.7
- Elevation of parapet wall	m	93.7	93.7
- Total length	m	325	325
- Height of dam	m	12	12
- Width of top dam	m	5	5
5. Spillway No. 1:			
- Elevation of spillway crest	m		+81.17
- Designed discharge of water releasing	m^3/s		995.7
- Check discharge of water releasing	m^3/s		1191.5
6. Spillway No. 2: new construction			
- Elevation of spillway crest	m		+84.00
- Designed discharge of water releasing	m^3/s		268
- Check discharge of water releasing	m^3/s		337
7. Dan Sach constructions: repairing			
a. Spillway			
- Elevation of spillway crest	m	435.0	435.0
- Designed discharge of water releasing (P=2%)	m^3/s	841	841
- Elevation of the highest water level	m	437.4	437.4
- Width of spillway	m	147	147
b. Weir			
- Elevation of weir crest	m	438	438
- Height of weir	m	8	8
- Width of weir top	m	5	5
c. Regulating culver			
- Dimension of culvert nx(bxh)	m		2x(1.5x3)
8. Management house: Improvement			
- 2 –floor house, total used area	m^2	485	485

2.2.4 Ancillary structures

Table 2.3: Description of ancillary structures

No.	Items	Description
1	Soil pit (has been used to exploit soil for dam filling before)	• The soil pit has an area of 321,566m^2 in Dan Hoa Village, Thuan Hoa Commune, North Hàm Thuận District, about 3km away from the main dam to the right. This is a low hilly and sloping area, with relatively flat terrain, elevation ranging from +55m to +60m and tending to lower down from the North to the South. No rivers and streams around. • Land is currently used for sugarcane, wheat and rice cultivation as major crops. • Volume of removed weathering: 64,313m^3. Volume of layer 2 exploited: 276,914m^3. Volume of layer 3 exploited: 544,737m^3
2	Quarry (manual exploitation)	• Expected to use the quarry in Dan Hoa Vilalge, Thuan Hoa Commune, Ham Thuan Bac District; about 3km away from the main dam to the right. This quarry is currently under exploitation manually by local people. Exploitable volume of about 45,000 m^3
3	Campsite (new construction)	• The campsite has an area of 4,400m^2 arranged at downstream of the works in flat terrain locations along the management routes no.1 and 5; it is 500m far from canal and 1000m far from residential area. This is permanently acquired land of dam's downstream; this area mainly are bare hills.
4	Landfill	• The landfill is 500m away from the construction site. The area is 10,000m^2; Elevation of filling does not exceed 1m high. • This is permanently acquired land of dam's downstream, mostly is bare hill, 2km far from Quao river, 1.5km far from the nearest residential area.
5	Materials assemble	• Located next to D2 road, 500m away from the main dam to the right; Area of 324,000m^2; it is 500m far from canal and 1000m far from residential area. This is permanently acquired land of dam's downstream; this area mainly is bare hills.
6	Place of construction materials suppy	• Construction materials shall be supplied by dealers in Phan Thiet City and Ta Zon (Ham Duc commune, Ham Thuan Bac district). The transportation distance to the construction site is 27-30m.

Source: Feasibility Study – Subproject for improved safety of Song Quao Reservoir (2015)

2.2.5 Transportation of soil, rock, construction materials

Table 2.4: Items for materials transportation

No.	*Items*	*Volume of transportation*	*Distance/Route*
1	Dam	• Soil: 115,377 m^3 • Rock: 49,204 m^3	• Soil shall be transported from the embankment borrow pit (Road D2)

No.	*Items*	*Volume of transportation*	*Distance/Route*
	repair	• Waste: 39,689 m^3 • Sand: 12,217 m^3 • Concrete: 4,984 m^3 • Steel: 133 tons • Cement: 7,152 tons	passing through NR28, along the construction route No.5 to the dam repair location, 3km long. • Rock shall be transported from Dan Hoa Village, Thuan Hoa Commune, Ham Thuan Bac District (along NR28 to management routes no.1 and 5) to the dam repair location, 3km long. • Waste shall be transported to the landfill located 500m away from the construction site, along the construction route no.1 and 5. • Sand shall be transported from Luong Tay Village, Luong Son Town, Bac Binh District to the construction site along NR 1A – Road 771 and QL28 (30km long); • - Cement, steel: 27km away from the works, transported through NR28 from Phan Thiet City.
2	Sluice repair	• Soil: 2,610 m^3 • Rock: 23,517m^3 • Concrete: 2,797m^3 • Steel: 208 tons	
3	Dan Sach headworks	• Soil: 14,292m^3 • Rock: 10,417 m^3 • Waste: 354 m^3 • Sand: 3,172 m^3 • Concrete: 2,772 m^3 • Steel: 169 tons • Cement: 1,538 tons	

Source: Feasibility Study – Repairing and safety improvement of Song Quao reservoir subproject (2015)

List of machinery and equipment for construction: During the construction phase, the major equipment may include: excavators, bulldozers, dump-cars, concrete mixers, concrete rammers, concrete pumps, water pumps, generators, metal welding/bending/cutting machines. See Table 2.5 for details:

Table 2.5: Construction equipment for repaired and upgraded Song Quao reservoir

No.	*Items*	*Function*	*Q'ty*	*Requirement of quality*
1	Concrete batching 30m^3/h	Mixing concrete	1	All vehicles must have the "certificate of inspection standards of quality, technical safety and environmental protection" consistent with Decision No. 35/2005/QD-BGTVT; in order to avoid excessive noise caused by machinery are not maintenance regular. - Qualified technical safety and environmental
2	18-ton crane	Transporting material	1	
3	Transportation truck	Transporting material	10	
4	Concrete rammers	Compacting concrete	8	
5	Water pumps	Pumping water for construction	5	
6	Generators	Generating power for construction and domestic use	2	
7	Levelers	Levelling ground	2	
8	Rollers	Compacting road surface	2	
9	Oil stex machine	Storing oil	2	

No.	*Items*	*Function*	*Q'ty*	*Requirement of quality*
10	Metal cutting/bending/welding machines	Cutting/ bending steel	2	protection specialized motorcycle road traffic participants (22 BC 278-01) - Qualified technical safety and environmental protection of road motor vehicles (22 BC 224-01)
11	Concrete, mortar mixers	Mixing concrete and mortar	6	
12	Mixture moving cars	Transporting mixed - concrete	2	
13	Handy borers	Drilling wall, concrete	10	
14	Concrete pumps	Puming concrete	2	
15	Jumping rammer	Compacting concrete	5	
16	Vibrator	Compacting concrete	1	

Source: Feasibility Study – Subproject for improved safety of Song Quao Reservoir (2015)

2.3 The construction schedule

Based on the workload, measures of construction diversion, flow of construction diversion, the construction period is expected for 2 years as scheduled in Table 2.6

First year: focus on repairing headwork items of Song Quao dam, excavation of Spillway 2 foundation, construction of Dan Sach Weir; part of concrete work construction of the sluice and spillway no.2.

Second year: Repair and completion of Song Quao headwork, Dan Sach weir headworks, completed concrete work of spillway no.2, construction of management routes, management house.

For repairing earth dam: Upon half of the dry season, water reduces to lower banquette +82.00m, focus on constructing the upstream slope from the top down (discharge water to construction below banquette +82.00m). When the reservoir drains to or under MNC, focus on constructing reinforced slope under banquette +82.00m. To limit concentrated water in Song Quao Reservoir and drain water in the reservoir, the construction work of Dan Sach dam should include coffer dam embankment to prevent water overflowing through Dan Sach Spillway.

For new construction of spillway No.2: foundation excavation, starting from downstream until the water level of the reservoir reaches below elevation +85.00m to start with the spillway threshold foundation, proceeding with concrete work of the spillway threshold, completed abutments for the installation of water planks.

Measure of diversion construction for Dan Sach weir:

- Dam and Spillway construction: Construction diversion through water canals.
- Canal construction: embankment of coffer dam at the canal head to elevation +436.00m, diversion to partly flow to downstream.

However, due to the construction work shall be done under operating conditions of the reservoir, the construction schedule shall completely depend on the storage schedule allowed by competent authorities. However, the project owner has prepared a plan of water supply for project area by using water taken from 812-Chau Ta canal of Bac Binh district and Ham Thuan Bac district, which is a construction using releasing water form Dai Ninh hydro power plant in

order to ensure production for 8,500 ha of arable land of 2 districts. At the same time, it also prevent drough for 12,000 ha of arable land of the southern communes of Bac Binh district (Song Binh, Song Luy, Tan Binh), and the northern communes of Ham Thuan Bac district (Thuan Hoa, Hong Son, Hong Liem) and Song Quao's irrigation area.Water supply for domestic use and productio for communes along canal and Phan Thiet city aslo is ensured. Therefore, the households living in downstream area still ensure production without impact due to cut – off water for construction.

PART III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

3.1 Applicable National Law and Regulations

a) Policies framework of environmental assessment

- *Law on environmental protection no.55/2014/QH13*, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment. Environmental report should be carried out simultaneously with the establishment of investment projects (Feasibility study report). Requesting time for EA report making, delivery and appraisal are specified in section no.2 of Article no.13 of Decree no.21/2011/ND-CP. Environmental screening steps (typical environmental assessment to the project) should be done in accordance with the list of projects type in Appendix 2 of the Decree no.18/2015/ND-CP.

- *Environmental impact assessment (EIA*). In chapter 4 of Decree no.18/2015/ND-CP on date 14/02/2015, from the article 12 to article 17 were specified in the formulation, evaluation and approval of environmental impact assessment reports, the implementation of projects and the designed mitigation measures to protect environment before and after a project officially operation. In the article 12 of this Decree also regards on environmental impact assessment process to the project implementation, the project owner have to organise meetings to public consultants, such as Provincial People's Committees, local authority (Commune People's Committees level- CPC), affected (direct or indirect) people or committees in the local by the project implementation, mandatory; analysis the feedbacks, comments obtained from the affected groups, and consider advantage or disadvantage the impacts of the project to community and to design the mitigation measures to reduce the negative impacts on natural environment, biodiversity, community. According to the Appendix no.2 of the Decree, the project has to make EIA if the reservoir capacity is of 100,000m^3 or more.

- *Environmental protection plan*. Chapter 5 of Decree no.18/2015/ND-CP on date 02/14/2015, from Articles no. 18 and no.19 and the Appendix II of this Decree defined that a new project implementation, or scale extension, increasing capacity have to identify the affecting objects and have to make a plan of environmental protection

- According to the regulations of Vietnam Government, the subproject "*Repair and Improvement for Safety of Song Quao reservoir- Binh Thuan province*" have to perform the report of Environment Impact Assessment.

b) Policies frameworks on dam safety

Decree no. 72 /ND-CP on date 07/05/2007 of the government of Vietnam on dam safety management. According to the decree, a big dam is the dam with the height calculating from the floor face to the top of the dam equal to or greater than 15 meters or dam of water reservoirs with the scale of capacity equal to or greater than 3,000,000 m3 (three million cubic meters). Small dam is the dam with the height calculating from the floor face to the top of the dam smaller than 15 meters. Dam owners are organizations and individuals owning dams to harness the benefits of water reservoirs or assigned to manage, operate and harness water reservoirs by the competent state agencies. Ministry of Agriculture and Rural Development takes responsibility before the Government for the implementation of state management of dam safety. The Ministry of Industry presides over and coordinates with ministries, branches and relative localities to appraise, approve or submit to the Prime Minister for approval of the process of operating hydropower reservoirs. The provincial-level People's Committees implement its state management on dam safety in the areas.

c) Land acquisition by the State and Resettlement policies

Law on Land no. 45/2013/QH13, effected on 07.01.2014, this law prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people owner of land and uniformly managing land, the regime of land management and use, the rights and obligations of land users involving land in the territory of the Socialist Republic of Vietnam. The law also gives the guidance on Land acquisition, recovery and compensation, resettlement and the requirement to ensure safety of dam corridor and reservoir, irrigation works, etc.

3.2 World Bank Safeguards policies Triggered

The safeguards policies of World Bank given in the form of operational policies (OPs), which includes 10 triggered policies, included the important policy OP 4:01 environmental assessment. Here are a summary of World Bank's policies that's related to the sub-project.

Table 3.1: Selected environmental and legal safeguard policies of WB related to the sub-project

Policy	***Objective***
OP 4.01 Environmental Assessment	- To ensure the environmental and social soundness and sustainability of investment projects. - To provide decision makers with information on potential environmental and social impacts related to the project. - To enhance the transparency and participation of affected communities into the decision making process.
OP 4.37 Safety of Dams	To ensure that dam safety issues are adequately addressed, especially for high and/or risky dams: - The policy involve to new dams construction - The issues occurs by the existing dams and dams under Construction he - The other important issue: dam height, reservoir capacity, suitability of safety standards
OP 4.12 Involuntary Resettlement	- To ensure that the following policies will be applied: - Avoid or minimize involuntary resettlement and impacts on economic activities, including loss of livelihoods - Provide transparent compensation procedures during involuntary taking of land and other assets - Provide sufficient investment resources to enable the persons displaced by the project to share in project benefits (implemented through the Resettlement Action Plan) - Restore and improve the standards of living of persons affected by the project - Provide prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project. Development of Resettlement Plan and mitigation measures must be carried out based on consultation with affected populations and participatory approaches.

PART IV: ENVIRONMENT AND SOSIO-ECONOMIC CHARACTERISTIC OF THE PROJECT AREA

4.1 Physical condition

4.1.1 Natural conditions

Climate: The subproject locates in the Ham Thuan Bac district, within the tropical equatorial monsoon, sunny, windy region, no winter and dry with two distinctive seasons: rainy season from May to October, dry season from November to April of the following year. According to the time series data of 5 years (2009 – 2013) at Phan Thiet hydrology station, average temperature through the year is 26-27°C; average moisture of 75-85%. This is also the area mainly influenced by the climate of south-central coast, rainfall, drought and lack of moisture. There are two main types of wind that affect the province's climate: the southwest monsoon (from May to October); Northeast monsoon (November to April in the following year). There is an average evaporation of 1,250-1,450 mm/year, evaporation of >4 mm/day during the dry season and 1.5-2 mm/day during the rainy season. Rainy season is in May to October each year, accounting for 85% of annual rainfall. Annual precipitation changes in the direction of ascending to the south, the average rainfall of 800-1600 mm/year, lower than the national average (1,900 mm/year). See table 4.1:

Table 4. 1: Summary of climate conditions in the areas in 5 year at Song Quao area

Month	*Temperature (°C)*	*Humid (%)*	*Rainfall (mm)*	*Wind speed (m/s)*	*Evaporation (mm)*
1	24,7	75	279,5	3,8	119,7
2	25,2	75	278,9	4,2	112,8
3	26,9	76	310,1	3,9	134,5
4	27,9	78	282,4	3,2	116,4
5	28,3	81	248,5	2,7	109,0
6	27,7	82	212,9	3,6	96,5
7	26,9	84	211,0	2,7	87,2
8	27,0	82	196,2	3,4	90,6
9	26,8	85	201,1	2,5	76,8
10	26,7	84	217,0	2,3	71,4
11	26,3	81	221,2	2,9	91,3
12	25,3	78	252,3	3,4	116,6
Year	**26,6**	**80**	**2911,3**	**3,2**	**1222,8**

Source: Project investment report (2015)

According to statistics, only 20% of years when storms and tropical depressions occurred in Binh Thuan. But in recent years, the number of storms and tropical depressions coming into and having direct influence on Binh Thuan has been increasing and with unexpected developments. Storms, tropical depressions are more likely to appear during October December of the year. Storms, tropical depressions when happening are normally accompanied by heavy rain causing to flood, landslide making great influence on the production and life of people.

Hydrology: The Phan Thiet - Cai River basin (Song Quao) lies between 2 districts of Ham Thuan Bac and Tanh Linh, originated from Di Linh Plateau at elevation 700m. The river flows in northwest - southeast director through the jungle, then in north - south direction through the Ham Thuan Bac plain to Phu Hai estuary (Phan Thiet) which is about 2.5km away from Phan Thiet Town to the North. There are total 13 rivers in the basin, including 4 primary rivers, 6 secondary rivers and one tertiary river in addition to the main river. The average network density of the entire river system is 0.51km/ km^2, including 1.05km/km^2 as the largest and 0.11km/ km^2 as the smallest. The river has large winding coefficient of up to 2.5 (Table 4.2).

Table 4. 2: Module of annual average flood flow (l/s/km2)

Catchment	*Remark*	*$F_{catchment}$ (Km^2)*	*Q_0 (m^3/s)*	*M_0 ($l/s.km^2$)*	*W_0 (10^6m^3)*
Song Quao	In the province	976.7	23.23	365.38	23.79
	Out of the province	91.6	2.29	36.15	25.09
	Continued from Dan Sách Dam		11.25	176.93	

Source: Investment report of subproject (2015

Flow regimes of rivers and streams in the subproject are general of 2 seasons: flood and dry seasons. Flood season lasts from June through November, with flow accounting for up 75%-80% of the total annual flow. Dry season normally lasts from December to May next year. Transition time from flood season to dry season is normally not more than 1 month water in the river suddenly drops rapidly. The most common reason is that rivers are short, with steep slopes, geologically absorbent, especially in recent years when the vegetations are growing depletion; thereby water retention and conditioning are decreasing.

Flood flows: Flood regime is a consequence of downfall and topographic and geomorphologies features of the river basin, river. Downfall in Binh Thuan is commonly typical of short period, high intensity, not large area.

Low flow: Dry season usually lasts from December, January through July, August next year. In January and February, rainfall is very little throughout the province, it rains in only some places, but rainfall reaches only from 5-10mm/month. In March, there is almost no rain in the region. Since April when southwest monsoon starts blowing alternately and early storm rains occurs sporadically with monthly rainfall of approximately 100 mm/month. In May, June, July when there is greater rainfall to form flows, but this flow is not large enough to be ranked as flood flow

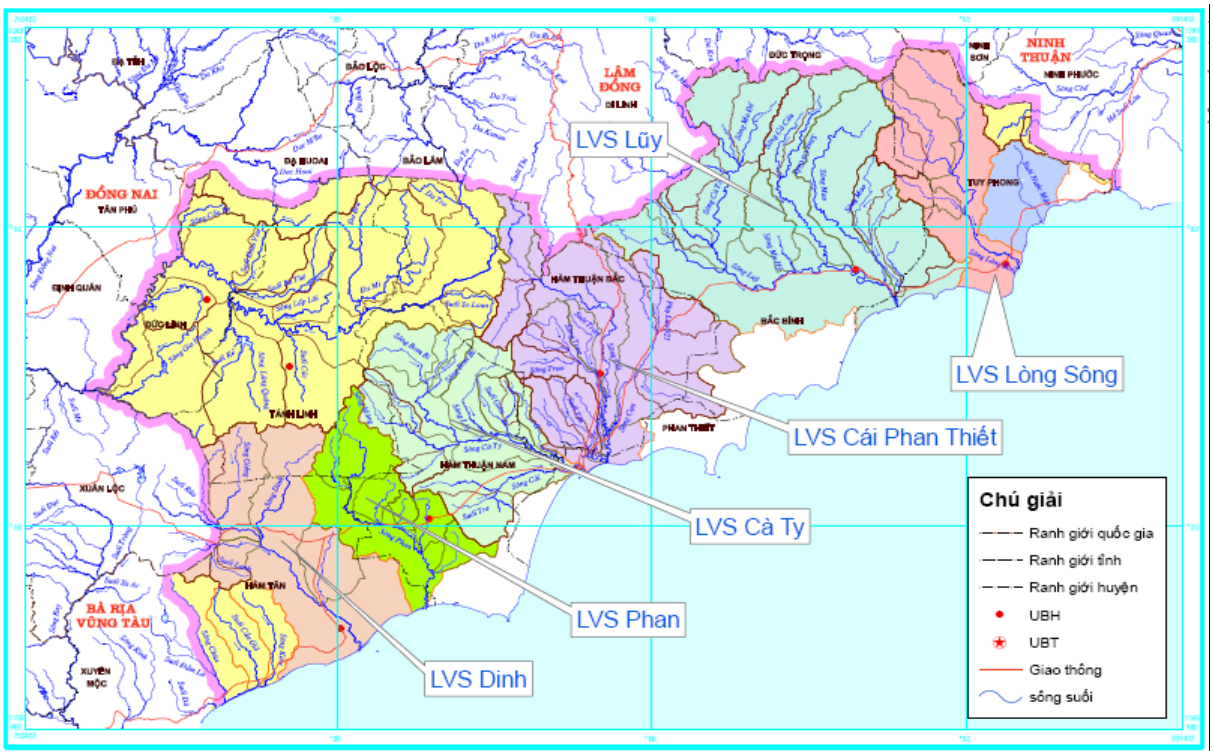

Figure 4. 1: Map of river network of the subproject

Topographical features: The topography of Binh Thuan province has a transition form from Highlands down to coastal plain, so the terrain varies diversely and complexity. As for Song Quao Reservoir which has low mountainous terrain with average altitude of 200-500 m (***Figure 4.2***).

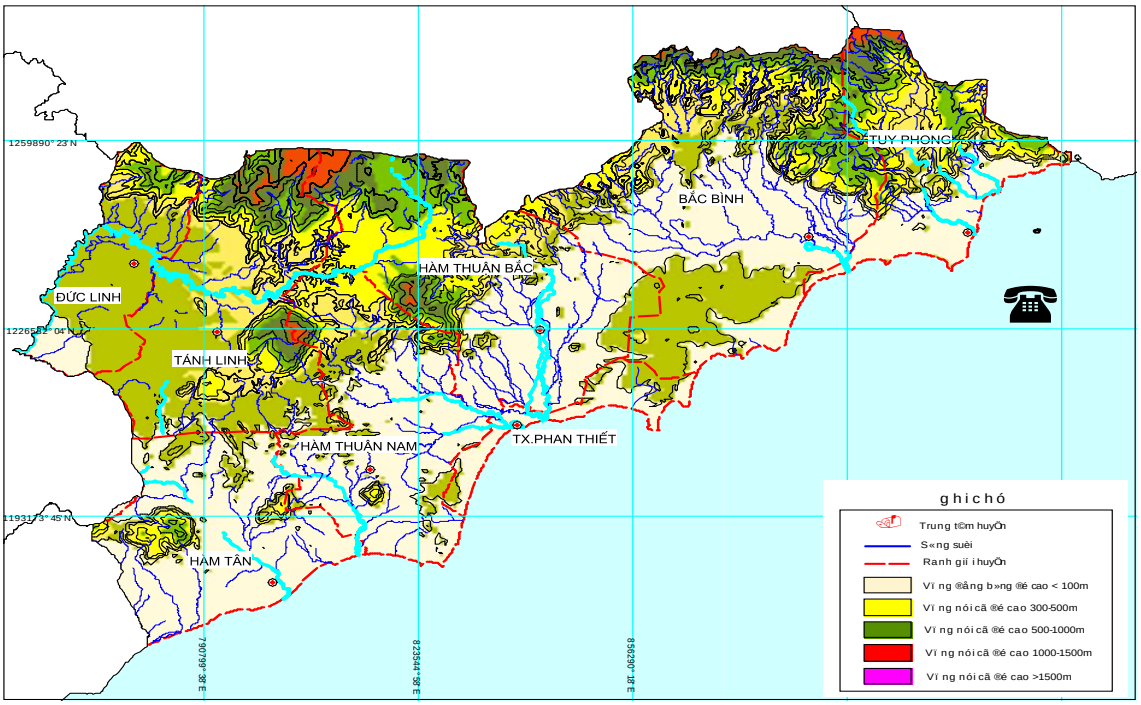

Figure 4.2: Topographic map of the subproject

4.1.2 Water environment

Surface water resources serving for agricultural, industrial production activities in the project area are mainly taken from Song Quao Rreservoir. Given the influence of rainfall distribution, the total average amount of water is unevenly distributed over space and time, the amount of water during the rainy season accounts for 80%/total amount. In the dry season, water from outside the province accounts for 73.33%/total amount of water .

*Surface water environment:*The status of surface water quality in the subproject is assessed through the analysis of 35 samples of surface water at 35 locations at risk of being affected by the subproject construction activities (average 2 samples each commune, as for Ham Tri commune with 9 samples for this location is the local concentration of headwork repair operations. Description of sampling locations are shown in *Table 1, Appendix A2).* Surface water samples are allocated as follows:

- Song Quao Reservoir water samples: 6 samples, at locations within headworks area (main dam, sub-dam): Ham Tri commune, Ham Thuan Bac District;
- River water samples: 18 samples at locations of irrigation canals in Ham Tri, Thuan Hoa, Ham Phu, Ham Chinh, Ham Thang, Ham Duc and Thuan Minh communes;
- Canal water samples: 11 samples at at locations of irrigation canals in Ham Tri, Thuan Hoa, Ham Phu, Ham Chinh, Ham Thang, Ham Duc and Thuan Minh communes;

Analyzed indicators include:

- Physio-chemical indicators: temperature, turbidity, pH, DO, EC, SS TDS, COD, BOD_5, NO_2^-, NO_3^-, NH_4^+, PO_4^{3-}, SO_4^-, Cl^- and Fe_{ts}
- Microbiological indicators: Coliform and Cl.Perfringen
- Heavy metal indicators: As, Pb, Cd,

Laboratory analysis results *(Table 2a, 2b, Appendix A2)* shows that the quality of reservoir water, river water, canal water is indicated by physical and chemical indicators (BOD_5, NO_2^-, NO_3^-, PO_4^{3-}, SO_4^{2-}) and heavy metals (As, Pb, Cd, Fe) which all fall below limits allowed in NTR08:2008/BTNMT (National technical standard of water quality), column B1 - water for irrigation and aquaculture purposes.

Some indicators go beyond the acceptable standards: SS concentration at NM13 of Song Quao Bridge, Thuan Hoa commune, which is 1.7km away from the main dam foot downstream has a value 52.12 mg/l; NM17 in Song Quao irrigation canal, Ham Chinh commune has a value of 86.60 mg/l exceeding the standards by 1.04 times and 1.73 times, respectively. For COD content, 3/35 (NM21, NM22, NM34) positions exceed by 1.17-1.31 times of irrigation water standard. For NH_4^+ content, 23/35 positions exceed the standard by 1.07- 10.08 times. For Coliform content, 1 point - NM27 (13000 MPN/100ml) exceeds the standard by 1.73 times. Parameters of PO_4^{3-}, SO_4^{2-}, NO_3^-, Cl^-, Fe, As, Pb, Cd all have contents lower than allowable standard (ensuring water quality for irrigation).

Compared with NTR08:2008/BTNMT, column A2 - the quality of surface water has met the requirements for domestic uses, but appropriate treatment technology must be applied because most of the physical and chemical indicators are not up to acceptable standards (this is water source for domestic use of residents of Ham Thuan Bac district and Phan Thiet city), heavy metal indicators remain within the limits allowed.

Comparing the results of water quality analysis with the NTR 39:2011/BTNMT - National Technical Regulation on quality of water used for irrigation, all the indicators: pH, DO, SO_4^{2-}, As and Cd are within allowable limits, ensuring quality for irrigation.

Thus, quality of surface water in the subproject area is primarily good, some positions in rivers, canals polluted in regard of SS, COD, NH_4^+ and Coliform are due to untreated domestic and livestock wastes discharged into rivers and canals in the area.

Status of groundwater environment: According to the study of Geological Federation 6, there area many in the subproject area has many units of water-rich, notably the water complex of fractures - holes in the basaltic formation. Due to the steep topography, groundwater drains strongly into rivers and streams. Most of boreholes get water in the basaltic formation.

Assessing the quality of ground water in 28 drilled wells of 28 households in 12 communes in the project area (these are areas affected by water cut for construction). Description of sampling locations of ground water is performed in *table 3, appendix A2*

Analyzed indicators include:

- Physio-chemical indicators: temperature, turbidity, pH, DO, EC, SS TDS, COD, NO_2^-, NO_3^-, NH_4^+, PO_4^{3-}, SO_4^{2-}, Cl^- and Fe_{ts};
- Microbiological indicators: Coliform and Cl,Perfringen;
- Heavy metal indicators: As, Pb, Cd;

Results of analysis of groundwater samples *(Table 4a,4b Appendix A2)* show that physical and chemical indicators (COD, NO_2^-, NO_3^-) and heavy metal indicators (Pb, As, Fe) fall within the limits allowed by the National Technical Regulation on groundwater quality (NTR09:2008/ BTNMT). Groundwater samples in the area have a pH in range of 7.08-7.92; reaching the allowed limit of NTR09:2008/BTNMT. COD indicators at 2 positions, NN18 and NN24 have exceeded the allowed standard by 1.1 times and 1.2 times, respectively. NH_4^+ indicator at position NN23 has exceeded the standard by 2.8 times. Coliform indicators of samples NN18, NN23 have contents exceeding the limit allowed in NTR09:2008/BTNMT by 6 times and 3.67 times. Coliform contamination has proved that groundwater has been affected by domestic activities.

Generally, residents in project area sastified quality of surface water as well as ground water. This area also is not affected by industrial zone and urban

4.1.3 Air environment

Assessing the status of air environment in the project area at 11 locations may be affected by construction activities, materials transportation, soil and rock pits ... *(Table 5, Appendix A2).* The indicators are vibration, noise, total particle, CO, No_x, SO_2.

In the subproject area, there are no plants, industrial parks or exploitation activities, traffic density is quite relaxed on inter-village/communal roads, air quality in the project area is quite good. The analysis results in *Table 6, Appendix 2,* show that the air quality in the project area is relatively good, noise level is less than the limit allowed in NTR26:2010/BTNMT, indicators of CO, NO_x; SO_2; suspended dust are within the allowable limits of NTR05:2009/BTNMT

4.1.3 Soil environment

Soil in the subproject area includes: alluvial soil; basaltic sediment dark brown soil; basaltic red-brown soil (Fk); basaltic yellow-brown soil; yellow-red soil modified from rice cultivation and steep valley converge land. To assess the status of soil environment in the project area, soil samples are taken at 28 positions *(Table 7, Appendix A2)* and 10 sediment mud samples were taken at 10 positions *(Table 9, Appendix 2)* which may be affected by the project construction activities or changes in flow regimes, sediment transportation.

Results of soil analysis in *Table 8, Appendix 2* show that pH content ranges from 4.29 to 6.47, under acidic soil; soil structure classified as sandy loam soil. Soil has low nutrient content: humus has low to moderate content, ranging from 0.61 to 3.74%. Total nitrogen of poor to moderate content (0.034- 0.109)%, total phosphate has low value of about 0.010 to 0.044%, total potassium has average to good content (0.147 to 0.956%).

Results of soil analysis in *Table 9, Appendix 2 shows that:* Sludge in the project area has high acidity (pH_{KCl} = 4.89-5.92), Soil structure is mainly sand, coarse silt, humus of average content (1.32-2.64%), total nitrogen of poor to moderate content (0.035 to 0.108%), total phosphate of poor level (0.015 to 0.04%), potassium of poor level (0.189 to 0.225%) classified as poor nutrition. Mobile aluminum 0.136 - 0.165 mg Al/100g soil. Content of heavy metals such as Zn,

Pb, Cu, As, Cd in sediment are within the maximum permissible limits of heavy metals in soil (NTR 03:2008/BTNMT- National Technical Regulation on limits of heavy metals in soil

4.2 Biology environment

In subproject area, most of the area is hilly, no agricultural production. Trees are newly planted, their bodies are small and low of <4m, less great value. Natural vegetation cover consists of only lower species of grass or roadside herbaceous plants and bush groups. The vegetation cover is poor and has no economic value. In the area, there is an absence of rare plants and animal species of conservation concern.

Figure 4 3: Vegetation at downstream of Song Quao reservoir at sub dam 1

Figure 4.4: Vegetation at downstream at main dam of Song Quao reservoir

4.3 Socio-economic and cultural characteristics

4.3.1 General characteristics

Socio-economic situation in 2014 of Binh Thuan province shows that the province's gross domestic product rose 8.75%, food production reached 778,237 tons, the output of 188,800 tonnes of seafood, exports reached USD 400.037 million, total state budget revenues VND 7,100 billion, of which domestic revenue is VND 3,975 billion, expenditure development from centralized budget is 661 billion. The economic structure continues to shift towards reducing the proportion of agriculture and forestry sectors - fisheries, increasing the proportion of industry - service. Irrigation system of the province meets the total cultivated area of 203,515 ha, food production of 778,237 tonnes. Total budget revenue is estimated at VND 7,100 billion. However, agricultural production is facing difficulties due to prolonged local drought, especially in areas inhabited by ethnic minorities, fruit tree area continues to grow rapidly, while the markets are unstable, depend on a market. The violation of fishery resources, forestry remains complicated, particularly deforestation in the adjacent areas, the life of a part of the people, especially ethnic minorities, coastal area is still difficult.

The socio-economic situation of project area is assessed on the basis of socio-economic assessment reports of two communes surveyed and results of quantitative and qualitative surveyed in the local.

Table 4.3: Socio-economic situation of two communes surveyed in 2014

Item	Ham Tri	Thuan Hoa
Mobilizing 6 year olds children go to school	100 %	100%
Mobilization 5 year olds children go to school	100%	100%
Rate of universalizing secondary education	-	81.6%
Rate of households participating in health	-	71.0%

insurance		
Rate of households participating in voluntary health insurance	-	29.9%
Poverty rate	3.65%	8.06%
Rate of households using electricity	99.1%	99.5%
Rate of households using sanitary water	99.9%	100%
Rate of households with sanitary toilet	99.62%	88.0%

(Source: Report on socio-economic, security and defense in 2014 and tasks in 2015, Ham Tri and Thuan Hoa CPC)

In general, socio-economic situation of two communes develops well and relatively uniform. However, the poverty rate in Ham Tri commune is lower than Thuan Hoa commune. Ham Tri commune also achieved "new rural" standard in 2014, while Thuan Hoa reached 14/19 criteria, expected to be complete by 2020. The results observed in the field also show that Ham Tri commune more favorable position, and terrain than Thuan Hoa commune and irrigation system severs for irrigation of agricultural land. Hence, Ham Tri commune has more conditions for development than Thuan Hoa commune.

According to the "Activity report" of 2012, 2013 and 2014 of Thuan Hoa commune and "Report on the socio-economic development, security and defense" in 2012, 2013, 2014 of Ham Tri commune, the annual growth targets are better than last year, which included all the criteria as the poverty rate, education, health care, the use of electricity, water use in domestic use and production activities. For example, the poverty rate of Thuan Hoa commune in 2012 is more than 12%, 8.06% in 2014 and expected 6.05% in 2015. Every year, the two communes are implemented plans to issue certificates of residential land and production land use right and land in production and supplied irrigation and drinking water for the people. These activities effect to daily life and production of local people.

In Ham Tri commune, basically, there is no water shortage due to water supply from Quao reservoir, but potential flooding in downstream areas caused by flood discharge in the rainy season may damage considerably life and property of the people in the region. Meanwhile, at the time of field survey, March 2015, Thuan Hoa commune is severely short of water for both the living and production.

4.3.2 Demography

As of 2014, Thuan Hoa and Ham Tri communes have 3,629 households, with total 15,178 people, of which, 51% male and 49% female. The average population density in the area is 109 people /km^2. Percentage of population in the working age accounts for 57.5%; rate of natural population growth in 2014 was 1.01%. The number of employees working in the field of agricultural production was 68.70%, 17.30% in industry and 14.00% in services. The percentage of poor households in the project area has decreased in recent years; it was 8% in 2014 (decreased by 4.0% compared with 2012).

Average person per household is 4.81 persons, including 7.5% of 2-3 persons person per household, 39.1% of 3-4 person per household, 49.6% of 5-8 persons per household and 3.8% of more than 9 persons per household. Average person per household in the poorest households is 3.54% lower than the general average rate, 60.0% of the poorest households have 1-2 persons. Those with high person per household belong to two richest groups. In which, person per household of the richest group is 5.46 person, and no household in this group has 1- 2 person. These results partially confirmed that human resources are essential in the process of economic development of households, especially in rural areas (Table 4.4).

Table 4.4: Demographic characteristics

	Average person per household	*Classification of person per household (%)*			
		1 - 2 persons	*3 - 4 persons*	*5 - 8 persons*	*9 or more persons*
Total	4.81	7.5	39.1	49.6	3.8
By commune					
Ham Tri	4.93	8.2	35.6	52.1	4.1
Thuan Hoa	4.67	6.7	43.3	46.7	3.3
By ethnic					
Kinh	4.65	9.8	39	48.8	2.4
Cham	5.18	3.9	39.2	51	5.9
Other ethnics	4.77				
By gender of householder					
+ Male	4.83	6.2	39.8	49.6	4.4
+ Female	4.71	15	35	50	0
By income group					
Group 1 (the poorest)	3.54	60	26.9	9.1	0
Group 2	4.81	20	21.2	19.7	20
Group 3	4.74	10	26.9	16.7	20
Group 4	5.48	10	11.5	27.3	40
Group 5 (the richest)	5.46	0	13.5	27.3	20

4.3.3 Occupation

Agriculture, forestry and aquaculture attract the most labors in the province. 45% of the population is involved in these works. The other occupations account for small proportion such as workers (5.9%), officers/employees (4.3%), short-term employees (2.6%), business (1.6%) and housework (1.6%).

4.3.4 Income and living standard

- *Self-assessment of living standard*

Table 4.5: Self-assessment of living standard of households

Wealthy		*Medium*		*Needy*		*Poor*	
n	%	n	%	n	%	n	%
16	12.0	87	65.4	22	16.5	8	6.0

Self-assessment of life is not high, only 12.0% of wealthy HH, 65.4% of medium HH, 16.5% of needy HH and 6.0% poor HH. The proportion of self-rated poverty is 5.5% in Ham Tri and 6.7% in Thuan Hoa commune. It is different from poverty rate of CPC in 2014 (3.65% in Ham Tri and 8.06% in Thuan Hoa). The female-headed households have lower living condition than male-headed households; ethnic minority households (Co Ho, Ra-giai,etc) have lower living condition than than the Kinh and Cham. The proportion of poverty in female-headed household is 15.0% compared with 4.4% in male-headed households; 23.2% of poverty in ethnic minority households and 10.5% of poverty in Cham households and 1.2% in Kinh HHs.

As for food of households: 80.5% of households is not in food shortage, only 1.5% of households in food shortage in 4 months a year, 11.3% of households in food shortage from 1 to 2 months.

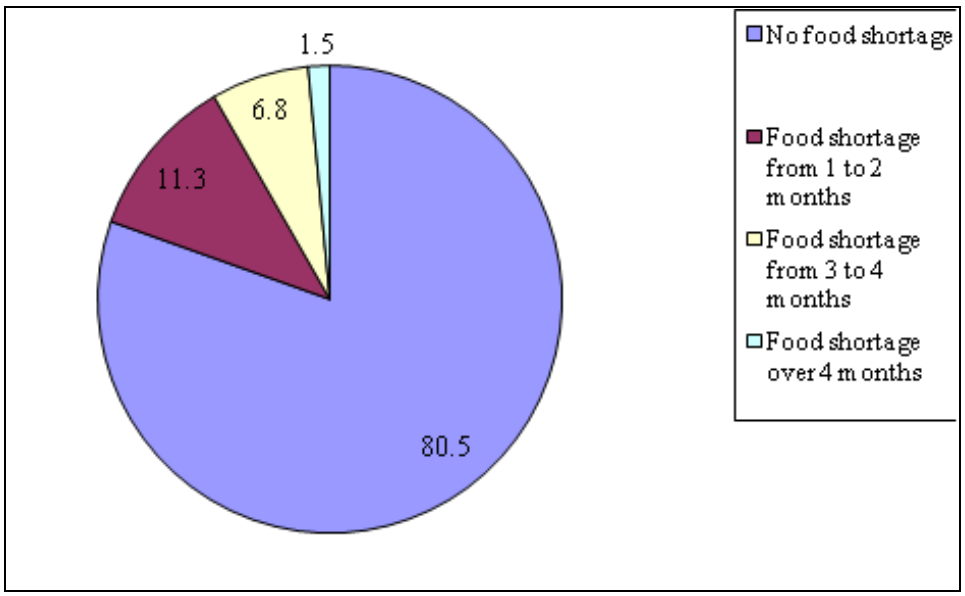

Figure 4.5: Level of food shortage in the past 12 months

However, the proportion of households not in food shortage in Ham Tri and Thuan Hoa communes are significantly different (84.9% and 75.0%), ratios of households in food shortage from 1 to 2 month in Ham Tri and Thuan Hoa are respectively 8.2% and 15.0%, which is consistent with the observations of the consultants on food situation reports as well as the socio-economic situation of the two communes. Food shortages also differ significantly correlated to gender and ethnicity of the household head. The proportion of female-headed households fall into food insecurity is higher than male-headed households (5.0% and 0.9% of food shortage over 4 months; 25.0% versus 3.5% of food shortage in 3 to 4 months). Only 50.0% of female-headed HHs has enough to eat (not lack of food), this ratio of male-headed HHs is 85.8%. Similarly with the ethnic minority households, no Kinh HH is in food shortage in four months, while that proportion of Cham households and other ethnic groups (Co Ho, Ra-giai, etc) is respectively 2.6% and 7.7%. Specifically, only 38.5% (1/3) of other ethnic households has enough food, nearly 2/3 of the remaining is in food shortage from 1 to 4 months.

Thus, gender and ethnicity of the householder has certain influences to the food situation of the HH. Food situation of the HHs reflects the results of economic development, according to the evaluation results, we can see the main issues of concern is accessibility to support programs aimed at economic development of local households, for example, accessibility to economic information, knowledge production and business development, loans or land resources for groups of people in the locality. It should be noted to the characteristics of the family relationship of the population in the area: The Kinh households are under patriarchy and men serve as householder, while Cham, Ra-giai and Co Ho, HHs are under matriarchy and women are householders. Participation in community activities such as public meeting to hear the information dissemination, knowledge is often assigned to the men, while the women, especially minority women, are not really "confident" in participating in this activity, and this more or less restricted access to their information, including economic information as well as the opportunity to access knowledge in economic development. Regarding access to loans, there are not too many differences in opportunity. All those who have been consulted have the same general opinion that the loan is based on the agreement of both spouses; however the householder retains a higher decision. As for land and other resources, according to the policy on land, the ethnic minority households in the province are provided 1 ha of agricultural land to produce, the poor get grant money to buy one cow worth 7 millions (Program 135). Besides, the local authorities performed relatively well the Land Law 2003 on the granting of land use right certificates with the name of the husband and wife, which facilitates more benefits for both genders in access to

land resources.

- *Income generating activities are variable*

Agriculture, trade / services, handicraft, salary / wages, savings / offerings and assistance for social-assisted HH. Fluctuation of the total average annual income of households is quite large (from 520 million to 9 million VND). Consultants divided into five income groups, including: Group 1 below 41 million VND; Group 2 from 41 to 76 million VND; Group 3 from 76 million to 107 million VND; Group 4 from 107 million to 178 million VND; and Group 5 with more than 178 million VND. The majority of households' economic development are agriculture, even the trade / service household or salaried workers also work towards the agriculture development by purchasing more land or invest in fruit as eligible for financing. People are very interested in the development of dragon fruit and consider this to help them out of poverty, but one hectare of dragon fruit needs investment of 70 to 80 million VND, and supply of water and other activities. For the households in Ham Tri commune, investment opportunities are relatively easier than Thuan Hoa commune for more abundant irrigation water, although they still have concerns about the difficulties during the flood discharge. This reflects the urgency of the rehabilitation of irrigation systems in the area.

The correlation between income groups and geographical areas, the proportion of households with incomes below 41 million VND in Ham Tri is 12.3% and 28.3% in Thuan Hoa. 45% of all female-headed households have an average income of less than 41 million VND a year, whereas only 15% of male-headed households in this group. On the results of the correlation between the two communes, one of the main reasons is the difficulty of irrigation water. If these households are considered to have less opportunity to invest in household economy, there is tight relationship between water, capital - the ability to escape poverty - investment – development opportunities.

A local staff of Thuan Hoa commune shared opinions: *"Thuan Hoa commune is not lacking land at the moment, however, water is a problem; therefore, people are difficult in the farming or livestock. While they do not have enough food, it is difficult to develope and enrich"*.

- *Changes of living condition*

The majority of the interviewees rated the good trend in local development in the last three years, only half of households has better living conditions than 3 years ago, Percentage of households have a better life in both communes are equivalent. However, the number of households has unchanged life in Thuan Hoa is higher than Ham Tri commune (38.3% and 32.9%) and the number of households with worse living condition in Thuan Hoa is less than Ham Tri (5.0% and 9.6%).

The majority of male-headed households have better living conditions (60.2%), while only 40% of female-headed households have better living conditions, and the proportion of households with worse living conditions is 7.1% of male-headed HHs with 10.0% of female-headed HHs. According to the analysis above, the male-headed households have economic life better than those with female-headed. So, it needs a more focused support for female-headed households to have more opportunities to their family's economic development towards a better life.

68.3% of the Kinh HHs have better living conditions, while in the ethnic minority households, this rate does not vary much (39.5% and 38.5% of Cham households and other ethnic minority households). Few Kinh have worse living conditions (4.9%) and 13.2% of the Cham have worse living conditions. This data confirmed the results of direct consultation, the Kinh households "seem" having plans and thinking towards development investment and economic life, better than households of ethnic minorities. Nevertheless, it is also good to households in other ethnic groups, although they are not well developed as the Kinh, but the proportion of households with worse living conditions is low (7.7%) and nearly equal to the local ratio (7.5%).

4.3.5 Education

Table 4.6: The education level of the households' members

Education attainment	Ratio %
Illiterate	10.8
Not yet school	8.3
Primary school	38.8
Secondary school	21.8
High School	13.5
Vocational school	1.1
College/university	4.9

Educational attainment in primary and secondary school accounts for higher percentage than other education groups (38.8% and 21.8%). The ratio of children dropping out of school in the province is not high (18.0%). Both communes have made universal primary education and 100% of 5 year old children went to preschool. However, the issues related to education may be summarized as follows:

- The school system in good Ham Tri is better than Thuan Hoa due to non-government projects funded;
- All households of ethnic minorities are entitled to the allowance for children to go to school, but the number of children dropping out of school has fallen into the households of ethnic minorities, Co Ho and Ra-giai.
- Universal primary education has been made for children born after 2005, so the status of illiterate children born before 2004 is still happen.
- Boys drop out of school than girls, the main reason is playing preference, attracted by the issues related to social evils such as shops, electronic games ...

4.3.6 Land use

- *Total productive land of HHs*

According to socio-economic reports in 2014, total productive land of Ham Tri commune is 3223.8 ha and of Thuan Hoa commune is 3196.7 ha. Over 93% of households have productive land in the local.

- *Land use right certificate (LURC) and representative person*

LURC are granted for land user, also confirms the ability to access resources such as land and other resources that the certificate is regarded as a condition (eg financial resources). Consultations on the issue: "Who is representative person of LURC?" show that the HHs has agreement on it, either Kinh or ethnic minority. Moreover, the purchase, sale, mortgage must be signed by both spouses. Thereby, it can affirm equality in access to resources in the province.

As reported by the CPCs, every year, the commune submitted to the district plan for the issuance of LURC for local people (including residential land and productive land). Thus, the ratio of lacking LURC is not high: 16.5% of residential land; 6.8% of productive land.

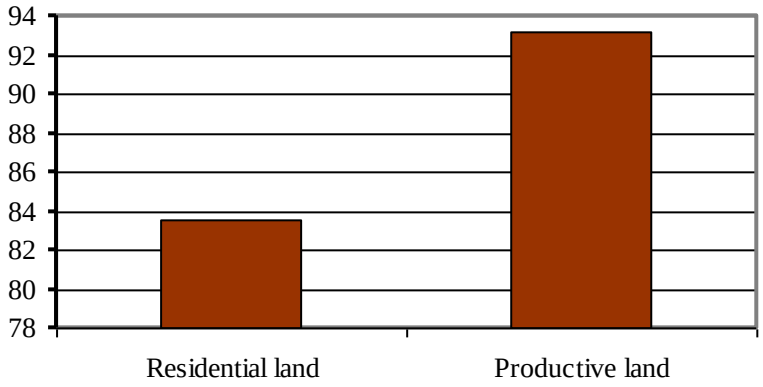

Figure 4.6: Land use right certificate

The proportion of LURC possession in households headed by men and women are equal. But there are significant differences between ethnic groups with the Kinh and Cham. 46.2% of other ethnic groups do not have a LURC in comparison with 18.4% of Cham and 11.0% of Kinh. This is also the group with worse living conditions and economic conditions than the other two groups. So, the absence of LURC is one of the reasons for this group struggling economic development.

4.3.7 Health and health care system

- *Sickness situation*

Within one year, more than two thirds of interviewees said that they have sickness, the common health problems include:

Table 4.7: Sickness situation

Sickness	Ratio (%)	
	Yes	**No**
Flu	49.0	51.1
Respiratory	12.2	87.8
Cold fever	-	100.0
Malaria	2.0	98.0
Liver	2.0	98.0
Poisoning	-	100.0
Injury	4.1	95.9

- *Health insurance*

83.5% of respondents have insured, 15.8% have no health insurance. Number of households accounted for 87.8% Kinh have health insurance, the number of households was 76.3% and the Cham ethnic people is 76.9%. Under the health insurance law, the minority of the economic difficulties in the area of social support enjoyed by the health insurance. Thus the rate of 70% of ethnic minorities in areas of health insurance is still seen and there are many objects that were omitted.

- *Clinic facilities*

83.5% of respondents have insured, 15.8% have no health insurance. Number of households

accounted for 87.8% Kinh have health insurance, the number of households was 76.3% and the Cham ethnic people is 76.9%. Under the health insurance law, the minority of the economic difficulties in the area of social support enjoyed by the health insurance. Thus the rate of 70% of ethnic minorities in areas of health insurance is still seen and there are many objects that were omitted.

Table 4.8: Clinic facilities

Clinic facilities	Ratio (%)	
	Yes	No
Commune clinic	30.6	69.4
Inter-communal clinic	-	100.0
District hospital	42.9	57.1
Provincial hospital	32.7	67.3
Central hospital	4.1	95.9
Private clinic	4.1	95.9
Pharmacy	24.5	75.5
Traditional medicine	-	100.0
Home-made medicine	6.1	93.9
Self-recovery without treatment	-	100.0

These factors undermine the health of people including: Vegetables / food insecure 48.3%; Drinking water contaminated with 37.9%; Environmental contamination and 29.3%.

4.3.8 Housing and sanitation

- *Housing situation*

Housing is considered as one of the important criteria for assessment of the standard of living of the people. Housing is one of the criteria aim to "new rural" localities, according to the "Report on the results of the national target program built NTM 2014. In 2015 in Thuan Hoa commune, 87.7% of HH has the housing standard of Ministry of Construction and no temporary housing.

According to the survey results: 96.2% of households live in this kind of semi-permanent housing; 3.0% of households in the timber, roofing sheets and only 0.8% of households in permanent housing.

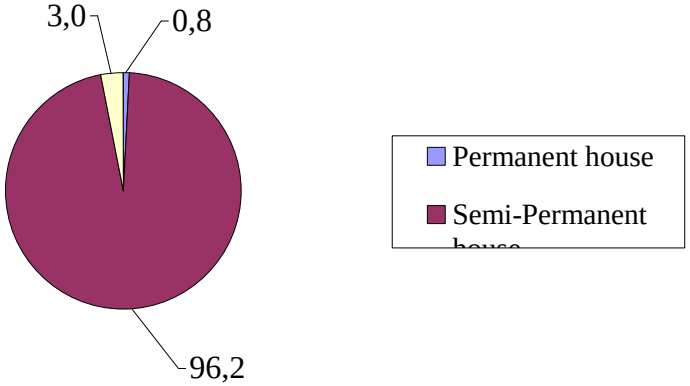

Figure 4.7: House types

Although the report on the economic situation of Ham Tri commune does not raise the proportion of households with housing standards, but as quantitative data collected, Thuan Hoa commune has 6.7% of households owned wood house with leaf roof while it is not available in Ham Tri commune. The ratio of the semi-permanent house of Ham Tri commune is 98.6% and of Thuan Hoa commune is 93.3%.

According to the standards of the Ministry of Construction, the housing standards to ensure adequate infrastructure facilities such as electricity, clean water, sanitation, however hamlet area 29 Population Association Thuan Hoa is the residence of the household Co Ho family is severely limited area under the dry season, the entire area people live in conditions lacking clean water, no toilets, temporary living. People said that they usually go away (to zone 34) to get drinking water and a dug wells to take washing water. In the male-headed HHs, the men will be responsible for carrying water for family use; in the female-headed HHs, this is a big problem for them because the burden on the water distances is a relatively heavy work. While the lack of water and sanitation to cause negative effects to children and women more than men because of their biological characteristics. The lack of water for a long time not only affect production but also affect the health of people.

House of Co Ho ethnic in hamlet 29 Thuan Hoa commune

4.3.9 Water supply

- *Water use*

In the subproject area, water use for domestic activities such as drinking, washing mainly from bored/dug wells and clean water resources of the State, water for production is taken from reservoirs and irrigation systems. Water difficulties and privation are more concentrated in Thuan Hoa commune, when they did not get access to Song Quao Reservoir irrigation system. People in Thuan Hoa commune use water to serve their domestic activities and production both from bored/dug wells (93.2% for eating; 91.7% for bathing and 93.2% for production). Source of domestic water supply is taken from 812 – Chau Ta canal (in Ham Thuan Bac and Bac Binh), this is a construction using water released from Dai Ninh hydro power plant. Therefore, the people in project area are supplied water adequately for domestic use in construction phase

Water resource use is relatively diverse, however, the use of water for the operation is quite concentrated. The use of water for activities such as eating, bathing mainly from wells / dug and water resources of the state, producing water taken from lakes and irrigation systems. Nevertheless, Binh Thuan province is located in the driest areas of Vietnam to the drill /

dig wells for water and having a lot of trouble, people here said: *"There has been quite a lot of exploration drill water be done, but the results are not very satisfactory because the water has dried up and no water "* .

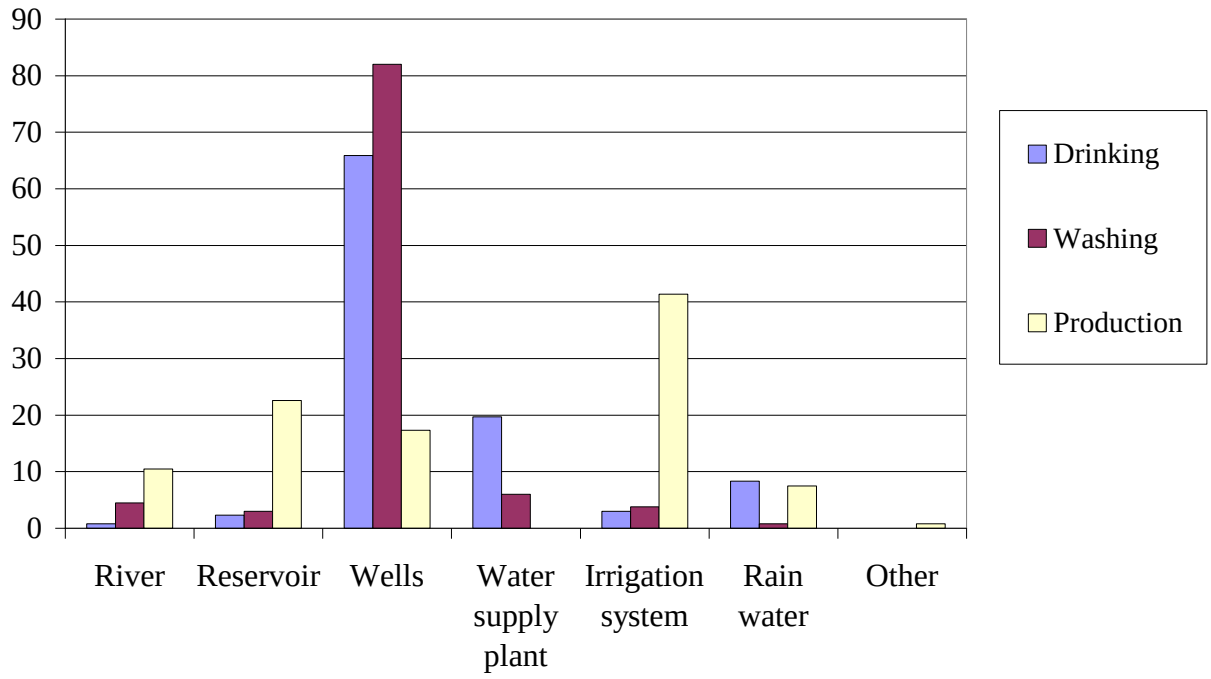

Figure 4.8: Water use situation

These difficulties, lack of water more concentrated in Thuan Hoa commune, when they do not get access to Quao reservoir irrigation systems. People in Thuan Hoa commune take water for domestic use and production from wells (drinking: 93.2%; washing: 91.7% and 93.2% of production), in the shortage time, they have to buy water from the tank car, a family of four has to buy water with cost of 150,000 VND is enough water for domestic use within 3 days.

4.3.10 Ethnic minorities

In the project area, number of ethnic minorities HHs is 1025, accounting for 6 % of total number of HHs. In the surveyed communes, Ham Tri and Thuan Hoa communes are inhabited by six ethnic groups, including the Kinh, Cham, Co Ho, Ra-giai, Gia Rai and Tay. Proportion of ethnic minorities in each commune accounted for 18.2% (Thuan Hoa) and 20.5% (Ham Tri) (Source: Center for Population - Ham Thuan Bac 2014). In total six ethnic groups, Coho, Ra-giai and ethnic Cham live long time in Ham Tri and Thuan Hoa communes. Survey results showed that no ethnic minority households are affected either by land acquisition or adverse effects resulted from project implementation. Consultation with ethnic minorities shows that they agree with the project and they are aware of the project will bring many benefits for the development of the local economy. The revenues of the majority of ethnic minority households depend on agricultural activities that they are having some problems in water source for production. They said that rehabilitation of Quao reservoir will supply more water for production, thereby helping to increase household economy. In conclusion, the ethnic minorities in the sub-project area will get more benefit from the project rather than adverse effects. However, due to the limited time of the field survey to match with project progress, comprehensive consultations with full number of ethnic minority households in the project area were not done. Therefore, additional consultations on situation of EM and their demand in the project will be conducted in the upcoming time of the project. Its results will be useful to prepare an Ethnic Minorities Development Plan for the sub-project.

4.3.11 Gender analysis

Gender issues in the province have been improved since the Law on Gender Equality. For instance, there is hardly case of serious domestic violence, women are more involved in solving family problems, as well as participate in social activities, there is no gender discrimination in education and health ... It should be noted that in the project area, namely two communes selected for the survey, is inhabited by the Kinh, Cham, Co Ho and Ra-giai, in which only the Kinh are under patriarchy, while other ethnic groups are under matriarchy. These features have a certain influence to gender issues in the province. Consultants collected data on the situation of the public officials of the two communes to analyze gender issues in the decision-making process of local and other quantitative information.

a. Gender in socio-political agencies

Gender issues in socio-political agencies are evaluated based on the summary of the situation of full-time and part-time civil servants of the communes in the project area. Because the data collected is not really sufficient, the analysis is only based on data collected in Ham Tri commune.

In general, the percentage of women in the full-time and part-time civil servants is relatively high: 2/11 full-time officer; 8/14 servants; and 11/23 part-time officers. Most of them were trained from intermediate to university level.

In the table of assignments, two female officers include one Deputy Chairman in charge of culture, one Head of Communal Women Union, while Chairman and Deputy Chairman in economy are male. Out of 8 female civil servants, three persons work in office, two accountants, two in charge of justice and household management and one in charge of arts. In three local land use management officers, no one is female.

Thus, although the percentage of women involved in the communal government system is not low, but women do not get the position to make decisions on either economic or politic issues.

Besides, the persons in the right position to make decisions at the local are Kinh ethnic (Secretary of the Party, Chairman and two Deputy Chairmans of the CPC).

In general, local government officials (both women and men), members of socio-politic associations and people said that the situation of women's participation in socio-politics has improved. Results of data analysis show that the improvement is only in terms of quantity, but in essence, women remains lower than men in positions of significant decisions in the local and this affects participation in the decision making process as well as the benefited opportunities of women. This problem should be included in gender action plan to improve the status of women in political participation.

b. Participation in activities of family and community

We can see clearly the division of labor by gender in the project area. Although all activities are involved with women and men, but there are activities that are mostly undertaken by men (61.7% afforestation; 81.3% forest production; 57.1% aquaculture), and housework, home care are undertaken by women (childcare 56.5%; 59.4% cleaning house; 60.9% cooking). The labor division by gender in the sub-project is not so different as analysis of the gender division of labor in Vietnam today. Women are involved in the production, reproduction and caring while men are mainly engaged in production activities.

The community activities such as community meetings, training on production, activities of political organizations are participated by both men and women, approximately 50% for each. The remaining participation rate of men is higher than women (39.1 community meetings, training on production of 45.5%, and the activities of political organizations, 43.6%). Thus, men are occupied key role in participating in community activities. And this reflects the restrictions

on women's access to information, knowledge, including information, knowledge production, economic development family.

There is a link between the active group in the division of labor by gender is as follows: When women have to spend too much time on the care and reproduce, they will not have time for production and operation community, moreover, the limited knowledge and information due to lack of time to participate in community activities makes it difficult to engage in productive activities. Meanwhile, the only new production activities to generate income and assume that it is more important activities. Clearly, inequality is happening in the province within the division of labor by gender. For issues related to the project activities such as consultations with people, organizing publicity, counting activities, compensation ... .bat equality makes women more vulnerable when not have the opportunity to participate.

Women do not generate income, lack of knowledge, lack of information so they are limited in participation in the decision-making in the family. The survey results have proven for this and can say it is an obvious consequence of gender inequality in the division of labor. Although the proportion of women and men participate in deciding the issue of family in 60.0% (decision expenditures 69.2 big family, decided to study / career 79.5 of children; investment decisions and production activities 65.4%), but the proportion of men decided to work in the family is still higher than women, for instance investing in the Exported to nearly one third (27.1%) men decided, while only 7.5% are women.

c. Female householder and gender issues in family

In female-headed households, the involvement of equality between husband and wife in the care and production, the rate of female participation in community meetings and social and political organizations than men (35.0% community meeting for women compared with 5.0% of men and participate in the political and social organization of 30.0% compared with 15.0% women, men), in the this case, women have access to information than men. During the consultation process, consultants questioned the invitation of community discussions on issues related to land, projects or activities that produce the responses that often will invite all households - Affordable here is why one is led to the head of the household will have more opportunities to access information.

Female-headed households also play a decisive role in the family than men. About decided to spend large family headed women, 70% decided by the couple and 30% is decided by his wife, men do not participate in the decision in this matter. On the issue of choosing a career, the proportion of women than men decision was 30.0% and 10.0%; Women who decide to invest in production accounted for 35.0% compared with 10.0% of men.

d. Gender equality in ethnic minorities

In which Kinh and ethnic other (Co Ho, Ragiai,etc) equal than group care in the production and care. In other ethnic groups (Co Ho, Ragiai,etc), women and men share the responsibility for the care, manufacturing and community groups is higher than the Kinh and Cham. For example, in reforestation activities, participation rates of households respectively: ethnic households (Co Ho, Ragiai,etc) 62.5%, 37.9% and Kinh households Care 32.1%. This is an activity that either spouse to join alone or men make, no single women perform, but nearly 2/3 of other ethnic households (Co Ho, out- period,etc.) have both male and female participants, this confirms the shared work evenly among heterosexual families in other ethnic groups (Co Ho, Ragiai,etc). Child care activities, respectively ratio: 46.2%; 48.1%; and 32.4%, although in this activity, women in all ethnic groups are assumed to be the main, however, this ratio also shows the different ethnic (Co Ho, Ragiai,etc) and Kinh have shared more than the protection of ethnic Cham. Regarding participation in community activities, the ethnic group with high participation rate than other ethnic groups (Co Ho, Ragiai,etc) and the Cham group, in other ethnic groups (Co Ho, Ragiai,etc.) the percentage of women participating in community activities than men, while the other two groups, male participation rate than females. For example in community meetings:

Percentage join two of the Kinh, Cham and other ethnic groups (Co Ho, Ragiai,etc) were: 54.9%, 50.0% and 46.2 %; The proportion of women participating in the meeting were: 3.7%, 7.9% and 38.5%; The proportion of men participating in the meeting were: 41.5%, 42.1% and 15.4%. In the decision, the couple Kinh and ethnic groups (Co Ho, Ragiai,etc) joined more than households who care, for example: Decision large expenditures in the family (The Economics 74.4%, 55.3% and the Cham ethnic 76.9%).

Thus, although the characteristics of family relationships between different ethnic groups (eg the Co Ho, Ragiai relatively similar Cham are patriarchal gender issues but not identical and whether matriarchy but Cham women still disadvantaged compared to other ethnic groups.

PART V. ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT

5.1.Sub-project environmental and social impacts screening

5.1.1 Environmental and social impacts screening

a) Subproject Environmental and Social Screening: Base on the results obtained from *table 3.1, Appendix A4*. River Quao reservoir sub-project has got 2 answers that related to the project category A characteristics, there are:

- The sub-project requires repair and upgrade a large dam: Earth fill dam on rock basement (type A) 40meters height, it belongs to the range of >25÷70m height, the construction type II
- Many affected construction sites are located in different places, each impact causes to natural habitat, natural resources loss or significantly reduce the natural qualities.

Borrow exploitation: during these activities, noise level and dust volume can be increased the transportation route is D2-QL28- TCQL No.1 and No.5 to construction site. Land slide can be occurred at the vulnerable sections of roads (TCQL No.1 and No. 5).. Eighteen households living along the transportation roads will be affected by activities (Thuan Hoa commune, communities areas No.1). In addition, grease and waste oil from machines working in the borrow pit and construction site can be generated.

The worker's camping site and material storage areas are located along the road of TSQL No.1 and No.5. The camping site of worker on construction of auxiliary dam 1 and 3 is next to irrigation canal about 100m. Hence, the camping site generates domestic wastewater and solid waste, these will impact to water in canal and surrounded environment if there is no mitigation measures application

Access and manage road construction will generate noise, gas emission and impact to local traffic, specially impacts to Ham Tri commune (about 10 households) and Thuan Hoa commune (households)

The impact are listed on above can be reversed or mitigated. According to regulation of World Bank, the first year sub-project have to develop the report of environment and social impact assessment (ESIA).

b) Screening the list of potential impacts on environment and social of the sub-project. The list of potential impacts on environment and social of the sub-project have to be solved (*table 3.2 Appendix A4*):

Based on screened list of potential impacts on environment and social of the sub-project result shows in *table 3.2 Appendix A4*, Almost of impacts are assessed at low to moderate levels and can be overcame or minimized. The sub-project of repair and Improvement for Safety of Song Quao reservoir – Binh Thuan Province have to prepare several report at this time, namely:

- ESIA report and its Appendixes :
  - Gender development plan (Appendix B2)
  - Public consultation, Participation and communication strategy (Appendix B3)
  - Gender development plan (Appendix B4)
  - Grievance and redress mechanisms (Appendix B5)
  - Model of implementation structure (Appendix B6)

- …

- RAP report (1 individual report)
- Dam safety report (1 individual report)

5.1.2 Ethnic minorities screening

In the project area, number of ethnic minorities HHs is 1025, accounting for 6 % of total number of HHs. Survey results showed that no ethnic minority households are affected either by land acquisition or adverse effects resulted from project implementation. Consultation with ethnic minorities shows that they agree with the project and they are aware of the project will bring many benefits for the development of the local economy. The revenues of the majority of ethnic minority households depend on agricultural activities that they are having some problems in water source for production. They said that rehabilitation of Quao reservoir will supply more water for production, thereby helping to increase household economy. In conclusion, the ethnic minorities in the sub-project area will get more benefit from the project rather than adverse effects. However, due to the limited time of the field survey to match with project progress, comprehensive consultations with full number of ethnic minority households in the project area were not done. Therefore, additional consultations on situation of EM and their demand in the project will be conducted in the upcoming time of the project. Its results will be useful to prepare an Ethnic Minorities Development Plan for the sub-project.

5.2.Positive impacts on environment and social of sub-project

The Subproject for improved dam safety of Song Quao Reservoir, Ham Thuan Bac District, Binh Thuan province will bring about positive environmental and socio-economic impacts to local communities as follows:

Improvement of dam safety

Most irrigation projects in Vietnam, including Quao reservoir have been built since the 80s of the last century, so far out of date, many works have been damaged, the Additionally, irrigation schemes often work in very complex environments including sun, rain, wind and storm, temperature, humidity etc. and especially, in the context of climate change significantly reduce energy force, the longevity of the system of irrigation works.

Quao reservoir with 73 million m3 capacity was completed construction before 2000, the earth dam has existed for a long time without rehabilitation. Thus the current state of the work are already degraded, reducing the volume of water and poor flood control, high safety risk. Besides, the building was built long ago on the basis of natural conditions, hydrology, design standards are no longer appropriate to the situation, current weather conditions, particularly in terms of the situation climate change is currently taking place on a complex and unpredictable. Therefore, the implementation of the project will remodel the damaged items were works and contributes to the safety of the facility.

The positive impact of spillway no. 2 is to ensure water drainage of construction in case of large flood (decreasing designed flood water level at elevation corresponding to flood frequency of P=1% in line with flood of construction grade II, still ensuring dam safety without increasing heigth of dam), ensure safety for downstream area. This is also benefit area of subproject, including 7 communes of Ham Thuan Bac district with total area of 39,815ha).

Improved dam safety, ensured long-term stability for reduced risks of damage to downstream area, promoting duties and improving the efficiency of works, sustainable development of water resources of Song Quao catchments. Specifically as follows:

- Ensuring the safety of downstream of Song Quao Reservoir when flooding, especially in seven communes located along flood drainage route of Song Quao Reservoir, including

Thuan Hoa, Ham Chinh, Ham Thang, Ham Tri communes, Phu Long Town, Ma Lam Town and Phu Hai Ward - Phan Thiet City, with about 39,815ha

- Ensuring domestic water supply for Phan Thiet City; water supply for Phan Thiet water plant at 20,000m3/day (equivalent to 0.231m3/s);
- Creating tourism landscape of the reservoir and its surrounding
- Beneficiary area is the plain stretching from Ham Tri commune down to Phan Thiet City (Ham Phu, Thuan Minh, Ham Liem, Ham Hiep, Hong Son, Hong Liem and Ham Duc of Ham Thuan Bac District - Binh Thuan Province).
- Beneficiaries include agricultural farming households growing rice, dragon, crops with a land area of 62,704ha; aquaculture households with an area of 1,154ha.
- The management road and dam pavement when finished will facilitate the prevention of and response to the breakdown of the reservoir, convenient transportation for people to travel and reduce vulnerability due to factors outside as drought, soil erosion, over cropped.

Environmental impacts: The repair work of headwork's items shall contribute to regulate the flow during flood season and supply water in the dry season making the regional humidity increase, ground water reserve in the soil increase, plants and species living near/in water facilitated to ensure the ecological balance of the basin. Environmental risks or incidents due to dam break, reservoir overflow will be surmounted and able to withstand certain conditions of climate change. When the reservoir is put back in operation, it will contribute to change the microclimate of the area. With stable operation of the reservoir, protective forests and upstream forest will be protected and further planted contributing to the development of aquatic ecosystems and forest ecosystems.

Economic impact: Currently, the main source of income to improve the lives of people in sub-project area is dragon fruit, so that the water demand is indispensable. While land resources are available and loan can be supported by the bank, i.e. Thuan Hoa commune, it is lack of irrigation water. Besides, the lack of water also cause inconvenience in daily life of local people as sanitation problems, especially affecting women and children. Thus, the rehabilitation of Quao reservoir will maintain the water storage, contributing to rehabilitation of irrigation systems for two communities, increase the water supply, since then, people have more opportunities to develop dragon fruits, raise incomes and improve livelihoods. At the same time, it will create a favorable environment for development and production activities in the downstream. People can actively regulate water on their fields, thereby increase crops by intercropping to improve family income.

Impact on gender issues: The lack of water in domestic production and create a lot of adverse effects to the people in the locality. In many areas, due to the lack of water, men and women spent most of the day to carry water for production and living, for those households with single women or elderly, it is really a difficult problem than other households.

Lack of water is the cause of the problems of hygiene, environment, toilets, baths, laundry... women, boys and girls are subject seriously affected by structural problems because of their biological characteristics, and the lack of water is the risk that they may be infected than men.

Thus, the provision of sufficient water for production and daily life will shorten the time cost for the production of male and female residents in the area, creating conditions and opportunities for them to participate in social activities. Enough water also contributes to reducing the burden on vulnerable groups such as single women, elderly and reduce the risk to women and children.

5.3.Negative impacts on environment and social

5.3.1. The historical negative impacts and mitigation action

a) Historical incidents

Flooding downstream, In 2000, due to flood drainage, approximately 3 hectares of rice and 2ha of shrimp were lost in Phu Hai ward, Phan Thiet City:

From 29/8 to 02/9/2011, in Ham Thuan Bac district heavy rain combined with flood drainage of Song Quao Reservoir caused local flooding damaging approximately 1,360ha plants of people (593ha of rice, 221ha of dragon and perennial trees and 546ha of vegetables); 6,000m of rural roads and about 214m^3 of landslide canals. The cause was due to heavy rainfall running into Song Quao Reservoir at the flow of 30m^3/sec. To ensure the safety of the reservoir, the management unit conducted flood drainage at 30-50m^3/sec.

In 2013, 80ha (rice + dragon fruit + crops) was lost in Ma Lam Town – Ham Thuan Bac District due to flood drainage of Song Quao reservoir.

In October 2014: in Binh Thuan Province, continuous rain for days flood drainage of Song Quao Reservoir made hundreds of hectares of dragon fruits in Ham Thuan Bac district flooded, causing significant damage to farmers. According to estimates, the Ham Thuan Bac district had more than 400 hectares of rice and dragon fruits flooded locally. Causes of flooding were determined as by long heavy rain and flood drainage of Song Quao Reservoir. Muong Cai, ChaGiang canals and Bridge No. 6 were filled; Ben Loi and Phu Long Bridges (under 1A Highway expansion project) under unfinished construction also made up congested flow. Water from upstream not being drained out in time caused to local flooding.

Drought, As of 21/7/2008, Ham Thuan Bac district had undergone 41 days of harsh drought. This has been the longest drought in Binh Thuan in the last 27 years. Major water source to irrigate for more than 8,000ha of summer-autumn crops in Ham Thuan Bac district and domestic use water for Phan Thiet city residents was from Song Quao Reservoir which was already in lack of about 67 million m^3;

Area of rice dried of drought focuses on some key communes as Ham Chinh (700ha), Ham Liem (600ha), Hong Son (600ha), and Ham Thang (268ha); the the rest is rice area of Hong Liem, Thuan Hoa, Ham Tri, Ham Phu and Thuan Minh communes. The ravages of drought which lasted for days in Ham Thuan Bac also affected on 1,300ha of crops in Hong Liem, Thuan Hoa, Thuan Minh communes and Ma Lam Town.

b) Remedies

To overcome the effects of floods, Phu Hai Ward, Phan Thiet city has restructured production towards greater economic benefits, people no longer growed rice and aquaculture but switched to inshore fishery because this is an estuary area, adjacent to the sea. Dredging measures were taken to clear congestion canals, to reduce local flooding situation.

Drought prevention plan, focusing on fully use of existing water in Song Quao and Suoi Da reservoirs, including surface water, ground water in rivers, ponds, wells to increase water for rice drought prevention. When water level in Song Quao reservoir goes down to elevation 70.00m, excavators shall be used to dredge sluice canals for increased amount of irrigation water; Encouraging local people to convert less active/uncertain rice production area into hybrid maize, cotton, beans ... in early crops

c) Problems to be solved in subproject implementation

Incidents mentioned above, partly due to effects of climate change, but mostly due to headworks under damage/degrade, affecting the reservoir safety and capacity to supply water for downstream area no longer responsive to the design. Specifically as follows:

At the main dam to the left and right abutment, asphalt concrete penetrated for crest reinforcement has deteriorated, much peeling and subsidence appeared on the dam crest, downstream ledge has been deteriorated or damaged in some segments. Due to waves, dam upstream slope has slagged down, stone pavement is of disportion, dam slope is waved, rugged and less beautiful looking. The downstream slope has many positions eroded by surface water, ditches and up/down thresholds mostly under damage; the dam slope is rugged and less beautiful looking. In rainy season, there is water infiltrated into gravel sandy slope reinforcement layer forming seepage flowing on the dam body earth slope causing to soil erosion of the dam body;

At Sub-dam No. 1: Concrete at crest was peeling, on upstream slope, MN zone pavestone was sagging and subsidence, downstream slope was being eroded;

At Sub-dam No.3: Concrete at crest was slightly peeling, cracking along the dam at 5-7mm wide, 3-4m long. Pavestone on upstream slope was peeling, MN zone was sagging and subsidence. On the downstream slope, topsoil layer was eroded to gravel layer, grass cannot survive leading to erosion of downstream slope due to rain water impacts. Also in rainy season, downstream of the dam is always flooded making raised saturation inside the dam body, affecting the dam stability

At Dan Sach Headwork: Non-spillway part of dam: (2 earth dam segments, 2 spillway abutments): Due to the impact of rainfall, the dam up/downstream slopes are annually eroded and degraded with bushy plants growing on the dam body. There is seepage and deep erosion at downstream to the left.

The above mentioned shortcomings need to be overcome when implementing the subproject

5.3.2. Land Acquisition and Gender Impacts

Impact on land acquisition. The area of land acquired for upgraded works include two categories: (i) Temporary acquisition of 3.7 hectares for the construction of auxiliary structures such as borrow pits, waste dumps, camps for workers, material gathering; (ii) Long-term acquisition of 1.2ha due to occupied works. 18 affected households have to relocate (77 people) at Thuan Hoa commune with total area of affected arable land of 162,000m^2 and 2,332m^2 of residential land to return construction's corridor. 10 households have to replace their house. 3 households are vulnerable group (1 poor household, 02 short - handed households). No affected households is ethnic people.

To minimize the impact of land acquisition, during detailed design, design consultant should consult local communities in order to find measures to minimize land acquisition and other adverse effects to people. On the other hand, a resettlement policy framework for the whole project and an action plan for resettlement for each sub-project has been prepared to ensure that all losses of people affected by the project causes are fair compensation

Impact on gender: the total number of affected households is 18 (34 male and 43 female). There are 4 households headed by women (accounting for 23.5%), while 1 household headed by single woman raising two small children, this household is also severely affected household losing nearly 70% of production land. Thus, the polcies of compensation and restoration of livelihood should be available to avoid impact on their life

5.3.3 Construction Impacts

Generally, there are a number of socio-environmental impacts. Which occur during the rehabilitation and upgrading of a dam project. Landscape will be altered by construction works, exploitation of construction materials and waste disposal. Trees and vegetation cover will be removed from the land to be acquired. Dust, noise and vibration will be generated from dam and access road rehabilitation and transportation. Solid waste and wastewater will be generated from construction sites and workers camps. Irrigation service will be disrupted during the replacement of the water intake. Loss of vegetation cover, changes in drainage pattern, erosion potential and

possible sedimentation would be issues of concerns at borrow pits. The introduction of workers and construction plants to the project area would cause social disturbance to local community. Construction activities, transportation, unloading or disposal of construction materials and wastes would cause safety risks to both local communities and the workers.

Impacts assesment will be made based on the resources to be mobilised and the volume of work under subproject listed below

Table 5. 1: Summary of workload during construction phase

No.	*Items*	*Number of workers*	*Number of equipment*	*Excavating amount (m^3)*	*Filling amount (m^3)*	*Other materials*	*Transportation distance*
1	Song Quao main dam	100	16	25,804	63,440	- Materials: 75,010m^3 of rock + sand Cement + steel: 7,454 tons	Transportation of soil: 1km; Transportation of materials: 30km
2	Spillway No. 2	50	15	23,517	2,610	- Materials: 23,517m^3 of rock; Steel: 208 tons	Transportation of soil: 500m; Transportation of materials: 30km
3	Dan Sach Weir	50	16	4,208	8,249	- Materials: 13,589m^3 of rock + sand; Steel + cement: 1,707 tons	Transportation of soil: 500m; *Transportaton* of materials: 50km
4	Management roads	20	11	1,700	2,000	- Materials: 1,500m^3 of rock + sand; Cement + steel: 220 tons	Transportation of soil: 500m; Transportation of materials: 30km
	Total	**220**	**58**	**55,229**	**76,299**		

The key potential impacts of the subproject are discussed below:

Impact on the natural landscape: During land clearance, 3.7 hectares of crop land for ancillary works and exfoliation of 32ha of surface soil in borrow pits area will cause changes in the surface, loss of existing vegetation cover, surface of borrow pits area will be replaced by convex and concave pits, soil exfoliated will be piled up as high in a position next to the mining area. These changes are not only possible negative impact on the landscape, but also affect the natural drainage, increase possible erosion, landslides and sedimentation in the area. At the same time there will be risks of safety for local communities to have access to that location. However, these impacts will be reduced by followed completion of mining in pits, removed soil will be leveled, returning the ground for people to continue farming.

Impact on the biological environment: Trees cut, weathered soil stripped ay affect the ecosystem in the soil due to habitat loss and habitat of birds and destruction of vegetation by topsoil stripping topsoil and soil utilization. However, the project area does not have any kinds of rare plants/animals to be conserved, so those objects are not be affected.

Increased level of dust, gas emission, noise and vibration:

Sources of dust, Herbal peeling, waste soil as well as transport of waste to dumps, ground leveling for construction preparation may increase the amount of dust generated. Concrete batch mixing and road traffic on unpaved roads combined with idling of vehicles can generate air born dust (suspended particulate matter) and gaseous emissions such as NOx, SOx and carbon monoxide. Dust can be released from unwashed machine and transportation vehicles, especially in a sunny days or drying season the dust clouds can upraise to 200m height in the air.

Dust generated by the repair work of the main dam and sub-dam, Dust may be generated from transport operations, loading and unloading materials, soil transportation, construction stone work. When transported, due to vibration and wind, dust and sand from on trucks and on roads will be gone with the wind generating dust. Dust concentration will increase in sunny days, spreading can range up to 200m if encountered high-windy date.

The volume of materials for dam repair construction including 15,389m^3 of sand, 59,621m^3 of stone, 7,152 tons of cement, 302 tons of steel will be transported from dealers in Phan Thiet city, about 30km away from the construction site. Materials are transported via NR28, passing through residential areas, CPC and primary school of Ham Thang, Ham Chinh communes, Ma Lam Town, Ham Tri and Thuan Hoa communes and following the management road to the construction place. In the construction plans, construction activities focus in dry season, so possible dust in dry conditions will impact more on the living environment of workers at the site and residents in the area.

Dust generated by construction of the spillway no. 2. Earthwork at the spillway site is primarily done by bulldozers, excavators. Volume of soil and rock excavated is estimated at 26,127m^3. Construction activities may easily generate dust, especially in the dry season. Materials to be transported to the spillway construction site include 2,797m^3 of concrete, 23,517m^3 of stone, and 208 tons of steel. Materials transported to the site will increase the amount of dust in the environment on the construction route no.1.

Dust generated by the construction of Dan Sach Weir: Dust is generated from transportation of materials, soil and rock for construction. Materials for dam construction and repair include 3,172m3 of sand, 10,417m3 of rock, 1,538 tons of cement, 169 tons of steel. These materials are transported from Phan Thiet city, 50km away from the construction site. Materials are transported via NR28, passing through the residential areas of Ham Thang, Ham Chinh communes, Ma Lam Town, Ham Tri, Ham Phu communes.

Dust generated by the construction of roads: With an amount of 1,700m^3 of soil to be moved from the construction site to dumpsite and volume of construction materials: 200 tons of cement, 20 tons of steel, 1,500m^3 of stone.

The estimation volume of dust generating is 28.5 tones. In which, 26.9 tones from the main dam and sub-dam rehabilitation; 304 kg from construction of spillway no.2; 1,26 tones from the construction of Dan Sach Weir and 4,4 kg from Repair and upgrading work of management roads, and as shown in Table 5.2 below:

Table 5.2: Estimated dust generated

No.	*Items*	*Emission factor*[1] *(g/m^3)*	*Transportation amount (m^3)*	*Estimated amount (kg)*
A	**Main dam and sub-dam Rehabilitation**			

[1] According to WHO's rapid assessment documents

No.	*Items*	*Emission factor[1] (g/m^3)*	*Transportation amount (m^3)*	*Estimated amount (kg)*
1	Dust generated from soil work	1-100 g/m^3	269,018	26,901.8
2	Dust generated from unloading and loading construction materials (cement, soil, sand, rock …) by machinery and equipment.	0.1-1 g/m^3	40,043	40.0
3	Dust generated from the construction process, cement kneading, concrete pouring	0.1-1g/m^3	18,699	18.7
4	Dust generated from vehicles transporting and dropping soil, sand	0.1-1g/m^3	20,305	20.3
	Total A		**348,065**	**26,980.8**
B	**Construction of spillway no.2**			
1	Dust generated from excavation work by machinery and equipment.	0.1-1 g/m^3	26,127	26.13
2	Dust generated from construction process, cement kneading, concrete pouring	0.1-1g/m^3	2,797	2.79
3	Dust generated from vehicles transporting and dropping soil, sand, etc	0.1-1g/m^3	26,127	26.13
	Total B		**61,066**	**304.11**
C	**Construction of Dan Sach Weir**			
1	Dust generated from soil work	1-100 g/m^3	12,457	1,245.7
2	Dust generated from unloading and loading construction materials (cement, soil, sand, rock …) by machinery and equipment.	0.1-1 g/m^3	1,707	1.7
3	Dust generated from construction process, cement kneading, concrete pouring	0.1-1g/m^3	2,772	2.8
4	Dust generated from vehicles transporting and dropping soil, sand	0.1-1g/m^3	15,629	15.6
	Total C		**32,565**	**1,265.8**
D	**Repair and upgrading work of management roads**			
1	Dust generated from unloading and loading construction materials (cement, soil, sand, rock…) by machinery and equipment.	0.1-1 g/m3	1,700	1.70

No.	*Items*	*Emission factor[1] (g/m^3)*	*Transportation amount (m^3)*	*Estimated amount (kg)*
2	Dust generated from construction process, cement kneading, concrete pouring	0.1-1g/m3	1,000	1.00
3	Dust generated from vehicles transporting and dropping soil, sand	0.1-1g/m3	1,700	1.70
	Total D		**4,400**	**4.40**
	Total		**446,096**	**28,555**

The total dust generated from these activities from the four main construction activities is estimated at approximately 28.5 tons. It may cause decreases in air quality and also affect the health of the construction workers and the communities living in the vicinity of the project area, particularly along the access road, borrow pits and the disposal sites

Gas emission:

Emissions generated by the repair work of the main dam sub-dam: mostly incurred from transportation of redundant soils and materials. Redundent soil of about 40,043m^3 will be transported to the landfill by diesel trucks in a distance of 1km, using 7-ton trucks to prevent damage to the road. Thus, 5,720 loaded turns are needed to transport redundant soil to the pit. Volume of materials (about 20,305m3 of sand and stone; and 5,000 tons of cement, iron) will be transported to the construction site by 10-ton trucks. With load of 10 tons per truck, estimated 25,000 trips will be required;

Emission generated by the construction spillway no.2, include emissions from the transportation of waste soil and construction materials. To transport 26,127m^3 of soil and rock, about 3,700 trips of 7 ton-truck will be used in the project area;

Emission generated by the construction of Dan Sach Weir, types of materials (approximately 15,629 m2 of sand and soil; and about 1,707 tons of cement, iron) will be transported to the construction site by 10-ton trucks. With load of 10 tons per truck, estimated 25,000 loaded trips will be required;

Emissions generated by the construction of management roads: emissions may arise from 243 turns of 7-ton trucks carrying excavated soil to landfill with a distance of 500m and from 172 turns of 10-ton trucks carrying materials.

Table 5.3: Estimated emissions generated

No.	*Items*	*Transportation amount (trip)*	*Estimated amount (kg/ton of oil)*		
			SO_2 (2.8)	*NO_x (12.3)*	*CO (0.05)*
A	**Repair work of main dam and sub-dam**				
1	Emissions generated from soil transportation	5720	16.01	70.35	0.29
2	Emissions generated from materials transportation	25000	70.00	307.50	1.25
	Total A	**30720**	**86.01**	**377.85**	**1.54**

No.	*Items*	*Transportation amount (trip)*	*Estimated amount (kg/ton of oil)*		
			SO_2 (2.8)	*NO_x (12.3)*	*CO (0.05)*
B	Construction of spillway no.2				
1	Emissions generated from the transportation of soil – rock	3,700	10.36	45.51	0.18
C	**Construction of Dan Sach Weir**				
1	Emissions generated from transportation of soil, sand...	15629	43.76	192.24	0.78
2	Emissions generated from transportation of construction materials	1707	4.78	20.99	0.08
	Total B	**17336**	**48.54**	**213.23**	**0.866**
D	**Construction of management roads**				
1	Emissions generated from soil	243	0.68	2.99	0.012
2	Emissions generated from materials transportation	172	0.48	2.12	0.008
	Total C	**415**	**1.16**	**5.10**	**0.02**
	Total	**52,171**	**641.69**	**146.07**	**2.6**

Increased noise level and vibration:

In pre-construction phase, three types of construction machines will be used. Average noise of bulldozer varies from 77-95 dBA, soil excavator is 72-96 dBA and truck is 70-96 dBA, while the permitted noise for bulldozer and excavator is 90 dBA, truck is 88 dBA. Thus, the level of noise generated from these construction machines will be below the allowable level.

During construction phase, with a set of 58 machines and equipment working on site, this impacts generating from clearing, grading, excavation, levelling, truck hauling, stockpiling, waste disposal, road development, transport vehicle, and on site construction. It contributes an inconvenience condition to the people living around the sites and to the workers. If high frequency and high level of noise in long time exposutr, some negative impacts will occur to the people and worker, reduce the yield of words, causing fatigue, stress, etc. But these impacts are most likely insignificant impact due to the resident areas located far away from construction areas (1km).

The duration of impact is anticipated to be low as appropriate mitigation measures shall be applied during the construction phase.

Sources of solid waste:

Pre-construction phase: Construction solid waste is generated from activities of trees cutting, topsoil removal, redundant earth from ground leveling, waste materials from camps construction, expected to generate approximately 40,043m^3 of redundant soil, rock. Trees demolished shall be utilized as fuel by households; Domestic solid waste generated by activities of workers at site. During land clearance stage, expected 50 people work regularly at the site, estimated amount of waste generated is 50 x 0.5kg waste/person/day = 25kg/day;

Solid waste generated during the repair work of main dam and sub-dam: According to subproject feasibility study, expected volume of soil removed from the dam body is about 25,804 m^3, volume of dam embankment soil is about 63,440m^3. In particular, the amount of 40,043m^3 of excessive removed soil will be gathered by dump trucks to the dumpsite which is about 500 meters away from the main dam, with about 100 workers working regularly at site, estimated amount of domestic waste generated is 100 x 0.5kg waste/person/day = 50kg of waste/day. This type of waste is highly biodegradable, especially on hot and humid days. When it rains, rainwater will bring along organic matters into the reservoir, rivers, canals polluting surface water;

Solid waste generated by construction of the spillway no. 2. The volume of soil and rock from excavation is 26,127m^3, transported to the dumpfill of 500m away. Besides, the construction process will generate waste from about 50 workers regularly present at the construction site. Amount of domestic waste generated in the construction phase is estimated at: 50 x 0.5kg waste/person/day = 25 kg/day.

Solid waste generated by the repair work of Dan Sach Weir. Excavated soil is 4,208m^3, refilled soil of about 8,249m^3. With about 50 workers regularly present at the construction site, amount of domestic waste generated in the construction phase is estimated at: 50 x 0.5kg waste/person/day = 25 kg/day.

Solid waste generated by the construction of roads: Amount of waste soil generated from road excavation is 1,700m^3, amount of filling soil is utilized from soil excavated at the dam body, no need to get more from the borrow pit so there is no environmental impact on the borrow pit area. Waste soil will be moved from the work site to the dumpsite, 500m away. During road construction, about 40 staff and workers are needed regularly at site. Volume of domestic waste is estimated at 40 x 0.5 kg waste/person/day = 20 kg of waste/day. Hazardous waste may arise from rags, machinery; oil tank/containers... These solid wastes have high degree of hazard to the environment. However, the amount is not much and under control from proper collection and treatment.

Thus, the volume of solid waste from removal of top soil cover is 97,882m^3 and domestic solid waste from camping site is (290 workers) 145 kg/person/day-night. The impacts assessed at high level, however the volume of solid waste is small volume and can handle in good way. Risks caused by catastrophic landslides*:* in the construction phase, land slide may be occurred, especially in the borrow pit. Run-off from construction site is a major factor to increase water turbidity and local rivers sedimentation.

Construction wastewater:

Construction wastewater is generated mostly from the activities such as concrete mixing, vehicle washing, machine and equipment cleaning, and construction material preparation. The estimation volume of construction wastewater at each site is from 3m^3 to 5m^3/d. Construction wastewater contains high suspended solid, inorganic matter and debris, low pH. The main small impacts of this wastewater are causing sedimentation in local canal systems and downstream areas and can be managed through site management measures. But with low wastewater

According to the research of Centre of environmental engineering of Ha Noi University of construction, the discharge and concentration of pollutant factors in wastewater are shown in table 5.4:

Table 5.4: Discharge and concentration of pollutants in wastewater

No.	*Type of wastewater*	*Discharge (m^3/day)*	*COD (mg/l)*	*Lubricant (mg/l)*	*SS (mg/l)*
1	Wastewater from machinery sanitation	5.0	50 - 80	1.0 – 2.0	150 – 200

QCVN 24:2009/BTNMT (B)	**6.3**	**100**	**5**	**100**

(Source: Center of Urban Environmental Engineering and Industrial Park – Hanoi University of Construction)

Waste and wastewater from workers' Camps:

Calculation of domestic waste and watewater generated by workers will be based on 0.5 kg of solid waste per day and 48L of wastewater per day. According to the construction schedule, the construction periods for the items have been identified and the corresponding number of workers, domestic solid waste and waste water is calculated in Table 5.5 and 5.6 below:

Table 5.5: Estimates of domestic solid waste

Items	*Number of workers (persons)*	*Construction duration (months)*	*Domestic waste (kg)*
Main dam and sub-dam	100	15	100 persons * 0.5 kg/d * 30 days * 15 months = 22,500 kg
Spillway	50	10	50 persons * 0.5 kg/d * 30 days * 10 months = 7,500 kg
Dan Sach dam	50	15	50 persons * 0.5 kg/d * 30 days * 15 months = 11,250 kg
Road	40	5	40 persons * 0.5 kg/d * 30 days * 5months = 3,000 kg
Total			**44,250 kg**

Table 5.6: Estimates of domestic wastewater

Items	*Number of workers (persons)*	*Construction duration (months)*	*Domestic wastewater (kg)*
Main dam and sub-dam	100	15	100 persons * 48L/d * 30 days * 15 months = 2,160 m^3
Spillway	50	10	50 persons * 48L/d * 30 days * 10 months = 720 m^3
Dan Sach dam	50	15	50 persons * 48L/d * 30 days * 15 months = 1,080 m^3
Road	40	5	40 persons * 48L/d * 30 days * 5months = 288 m^3
Total			**4,248**

Improper management of such waste may pose health risks to workers and cause environmental pollution. Domestic waste storage, collection and disposal should be carried out properly under camp management plan (collect, storage and transport have to follow the regulation to protect environment and sanitairy).

Domestic wastewater mainly contains suspended solids, organic pollutants, nutrients (nitrogen and phosphorus), and disease-causing microorganisms. Those polluting agents may be absorbed into the ground making groundwater and soil polluted. Domestic wastewater, if not properly treated, may pollute sources of surface water in the area. However, domestic wastewater are biodegradable aerobically or anaerobically and, if not properly collected and treated according to stipulated regulations, may affect the surface water quality (due to washing) and groundwater (due to endosmosis). These impacts are possibly overcome or mitigated.

Table 5.7: Estimated amount of dirt in domestic wastewater

Calculated on 100 people

No.	*Items*	*Unit*	*Q'ty*[2]	*Estimated amount of pollutants in domestic wastewater (g/day)*
1	BOD_5	g/person.day	45 – 54	4500 – 5400
2	SS	g/ person.day	72 – 102	7200 – 10200
3	TSS	g/ person.day	70 – 145	7000 – 14500
4	NO_3^-	g/ person.day	6 – 12	600 - 1200
5	Coliform	MPN/100 ml NT	$10^6 – 10^9$	$100x10^6$ - $100x10^9$

The subproject will manage the waste and wastewater from workers camp through contractor's contractural obligations.

Hazardous Waste Generation:

Waste oil generated during the repair work of main dam and sub-dam: In order to catch the project schedule, it is expected that the construction process will use 16 equipments and machines, 12 types of which use diesel oil. Thus, the amount of oil potentially released into the environment is about 18 litres of diesel oil/month/unit x 12 = 216 litres of waste oil/month. Although it is difficult to restrict the contamination level of waste oil, if collected properly, impacts that may cause to the environment can be limited.

Waste oil generated by the construction of spillway no.2: It is expected that the construction process will use 15 equipments and machines, 12 types of which use diesel oil. Thus, the amount of oil potentially released into the environment is about 18 litres of diesel oil/month/unit x 12 = 216 litres of waste oil/month. Although it is difficult to restrict the contamination level of waste oil, if collected properly, impacts that may cause to the environment can be limited.

Waste oil generated by the construction of spillway no.2: It is expected that the construction process will use 16 equipment and machinery, 12 types of which use diesel oil. Thus, the amount of oil potentially released into the environment is about 18 litres of diesel oil/month/unit x 12 = 216 litres of waste oil/month.

Waste oil generated by the construction of management roads: It is expected that the construction process will use 11 kinds of equipment, motored vehicles, 8 of which use diesel oil. So oil release in the environment is potential, in particular: 18 litres of diesel oil/month/equipment, motored vehicles x 8 equipment, motored vehicles = 144 litres of waste oil.

[2] Source: Environmental management in developing countries, volume 1

Total amount of waste oil arising in the course of implementation is estimated in Table 5.8.

Table 5.8: Estimated amount of waste oil generated

Items	*Number of equipments*	*Construction duration (months)*	Waste oil *(l)*
Main dam and sub-dam	16	15	16 items * 18L/ months * 15 months = 4320
Spillway	15	10	15 items * 18L/ months * 10 months = 2700
Dan Sach dam	16	15	16 items * 18L/ months * 15 months = 4320
Road	11	5	11 items * 18L/ months * 5months = 990
Total			**12.330**

Changes to surface water quality or flow. The repair work of dam, spillway and sluice may increase water turbidity due to excavation and embankment activities. Construction wastewater, domestic wastewater of workers on site if not properly collected, treated may increase the amount of organic and inorganic matters, and microorganisms in the water. Construction waste, domestic waste of workers may impede the flow. Waste on the surface may be swept away with rainwater runoff increasing the turbidity of water and impeding the flow. Objects of impacts are production activities, over 200 workers on construction sites and people who live near the construction area (about 50 people). Impacts that may affect the water quality occur mainly in the construction area and completely depend on human consciousness so they are possibly overcome and limited with mitigation measures;

Erosion and sedimentation of reservoir bed. Activities of dam slope excavation, waterproof jet-grouting, removed old sluice, soil pits may cause soil erosion and sedimentation of the reservoir bed;

Increased level of dirt or pollutants in the air due to the construction and materials transportation, rock exploitation; when transporting materials, waste soil, due to vibration and wind, dust and sand in trucks and on roads will be swept with the wind generating dust. The amount of dust generated during dam construction is estimated at 26.98 tons. Total dust concentration, NO2, CO, CO2 in air in the construction area may also increase (465 kg/ton of oil) causing respiratory diseases, skin diseases, affecting the health of workers on the site and the people in the area.

Increased noise/vibration. Noise arises mostly from the excavation and filling operations with equipment, transportation vehicles... Noise has bad impacts on workers at the site and causes discomfort for people living in the neighborhood. Exposure to high noise in a long time may cause to decreased hearing, fatigue, stress, insomnia, reduced labor productivity; people if being affected by too loud noise continuously for 8 hours and for months may get occupational deafness disease and increased blood pressure which affects the nervous system... Areas affected by noise and vibration are construction sites. Noise pollution is local in nature, mainly affecting workers on site. Subproject implementation areas are normally located away from residential areas, so the impact to the surrounding population is negligible.

Changes of landscape. Activities of transported equipment, gathered materials, excavation and embankment during construction of headwork, soil and rock mining may cause changes of landscape in the subproject area, creating high mounds at the disposal (road management road

no.1 and 5) or hollow land plots from soil mining in Dân Hòa Village, Thuan Hoa Commune. These impacts are assessed as high and need mitigation measures.

Impact of reservoir safety. During construction of dam and sluice, large volume of soil and rock must be excavated and removed; abnormal rains/floods may cause the dam break, flooding downstream areas; so measures are needed to prevent and timely response.

Risk of fire and explosion incidents. Fire incidents may occur in the case of transport and storage of fuels for construction of reservoir dam or less safety of the power supply system. High air temperature combined with high concentration of hydrocarbon in the air is the potential agent causing fire/exposure of fuel storage areas affecting severely on workers directly involved in labor and environment area of the subproject. When the fire is related to oil/petroleum, it may lead to a high risk of damage to human assets - economic, danger to human life, generate toxic gases affecting the quality of the air environment.

Impact of biological environment. Soil work activities may make water turbid, changed water quality due to leakage of grease, waste ... affecting habitats like no spawning place, killed young fish, reduced photosynthetic capacity of algae ... That would disrupt and unfavorably change habitats for fish and other aquatic species, affecting the lives of aquatic ecosystems. Felling of trees, vegetation and topsoil turning up often cause soil erosion. Noise and vibration from excavation and embankment, leveling may affect biological lives and behaviors and move the animals out of their current living area. The construction may cause to direct or indirect loss of wild plants and animals. This impact is primarily due to turbulence, movement and re-distribution on ground surface. Dust generated from construction activities and transportation of construction materials may cover on trees near the site and along the two routes for transportation from the soil pit to the work site impeding the photosynthesis process of plants. Scope of crops affected is approximately 20m around construction site and 10m along transport routes. However, this impact is not large for rain may wash out dust on leaves. These impacts are relatively obvious but local and short-term, so the level of influence to the ecological environment is low.

Impact of explotion for construction, during footing excavation of spillway no.2, drilling and blasting is applied, blasting activities will cause negative impacts such as generated dust, noise, emissions causing polluted air environment. Scattered soil, rock may cause accidents for workers, affect the habitat of plants and animals in the reservoir (because the construction site of spillway no.2 is located beside Song Quao Reservoir).

Construction activities may cause damage to rural roads and infrastructures; Rural transport in the project mainly include aggregate roads, narrow pavement of 3-5m without reinforced roadbed. Along the road is a system of canals for irrigation and drainage, power system, lighting system, water supply system, waste collecting positions... all of these infrastructures are not often permanent. Materials transportation, waste transportation with often use of more than 10 ton vehicles will cause collapse, subsidence, destroyed roads, damaged infrastructure possibly leading to stopped supply of power, water to people in the area;

Traveling in the project area, During construction, big concentration of workers (290) as well as vehicles (16 equipment and 52,171 turns of 7-10-ton trucks) will cause traffic jams, especially at the intersection with NR28, affecting the traveling and production of people in two communes of Ham Tri and Thuan Hoa. This impact is assessed as high and needs mitigation measures;

Risk of safety and human health; Domestic waste from the camps without proper management may cause insanitation, such as bad odor, disease infectious organisms as flies, mosquitoes, rats... adversely affecting the health of workers and the community. Hazardous waste such as termite chemicals, waste oil may directly affect the health of people or indirectly affect due to water pollution. 4.8m3 of wastewater/day.night is estimated. Domestic wastewater mainly contains suspended solids, organic pollutants, nutrients (nitrogen and phosphorus), the disease-

causing microorganisms. The polluting agents may be absorbed in the ground polluting groundwater and soil. These negative impacts can be minimized through good implementation of environmental management program.

Potential conflicts between construction workers and local people. Construction activities are most in the dry season, many items of construction and many workers of up to 200 at the same time will promote transient services due to increased demand for food and of workers. Infrastructures of the project area, such as roads, service facilities are not responsive to the increasing number of people. Those arising needs may cause conflicts between workers and local people if measures of workers administration are not available;

Risk of accidents for workers and the communities. During transport, soil and rock scattered on roads, if not cleared will make loss of beautiful looking, endanger people and traffic vehicles, increasing risks of road traffic accidents (stretch of road passing through Ham Tri and Thuan Hoa). The use of excavators, bulldozers in earthworks, compaction machines, concrete batching station... may make risk of accidents for workers. These impacts are assessed as high and detailed assessment is required for remedies or mitigation measures;

Risk of diseases transmission from workers to local people (and vice versa); As assessed by health sector, percentage of spread able diseases like respiratory diseases, diarrhea, skin diseases, HIV, hepatitis ... tends to be higher in rural areas. Water pollution, air pollution due to the subproject activities may increase the said-above diseases. In addition, workers moved from other places may also bring pathogens leading to the risk diseases transmission from local people to workers or vice versa via water environment, air environment or contact between people and workers through normal life activities;

Impact on social organizations. Social organizations in the subproject, including veteran's, women's, youth unions of Ham Tri, Thuan Hoa communes are involved in monitoring construction contractors implementing the Environmental Management Plan to timely reflect any impacts of construction on the environment and society. When conflicts arise between workers and local communities, social organizations shall act as mediators. In addition, the social organizations also support the construction contractors in workers management, communication for improved community awareness. Youth organizations can participate in volunteer activities of traffic management;

Impact on utility services. The concentration of workers at the highest time of up to 200 people may disrupt the ability to provide basic needs such as food, water supply, health services... These impacts are assessed as moderate and remedies are required to not affect domestic activities and production of people in the project area.

Negative impact of water supply for domestic use and production: the construction activities of dam, outlet works and spillway are mostly implemented in dry season when water level in reservoir is lowest and water must be drained for construction of items under death water level. Water supply for domestic use and production would not be ensure d at this time for people at downstream and Phan thiet city. However, the project owner has prepared a plan of water supply for project area by using water taken from 812-Chau Ta canal of Bac Binh district and Ham Thuan Bac district, which is a construction using releasing water form Dai Ninh hydro power plant in order to ensure production for 8,500 ha of arable land of 2 districts. At the same time, it also prevent drough for 12,000 ha of arable land of the southern communes of Bac Binh district (Song Binh, Song Luy, Tan Binh), and the northern communes of Ham Thuan Bac district (Thuan Hoa, Hong Son, Hong Liem) and Song Quao's irrigation area.Water supply for domestic use and productio for communes along canal and Phan Thiet city aslo is ensured. Therefore, the households living in downstream area still ensure production without impact due to cut – off water for construction.

5.3.4 Impacts during operation phase

When the project finishes, the work is put into use, some status quo may change from the past. In addition to positive and favorable changes to the natural environment, socio-economic conditions of local people, there are still some negative impacts which are not significant and can be removed. The main sources of impact are as follows:

- Landscape, ecological environment: completed repair will contribute to improved landscape of the reservoir area, convenient transportation; facilitate lives of freshwater fish species.
- Local social-economy: stable agricultural production, secured livelihood for people, increased income from agricultural production and aquaculture
- Public health: In this phase water will be brought to foot of high fields, which helps reduce labor power for farmers.
- Soil, water and air environment: Quality of soil around the reservoir and water is affected by washed fertilizers, plant protection chemicals from agricultural production

Impact due to operation of spillway no. 2: the water releasing corridor of spillway no. 2 is a right small distributary of Quao river (2km length) going through a head section of main canal and NR 28 and then entering the main river. In case of releasing waer, the households living along corridor may be submerged (approximately 20 households). The water releasing corridor cut management road to sub dam no.1 and a head section of main canal, so 2 constructions may be affected. However, releasing water at spillway no. 2 is very rare because it would work in case of flood exceeding frequency of P=1% (1 times/100 years)

In case of emergency flood drainage, about 233,600m^2 production land of Ham Tri commune may be affected by flooding due to excessive flood drainage (3m higher than normal water level)

Risk of dam safety: Dam failure may greatly affect the regional hydrological regime, as well as water environment, soil environment, aquatic ecosystem, water supply for irrigated area, agricultural production downstream of the project. Particularly, dam failure may make great influence on lives and property of 22,100 households in 7 downstream communes/towns of Ham Thuan Bac District. Overcoming the consequences of dam failure incident is very hard and long lasting; therefore, mitigation measures proposed in Chapter VI of this report should be strictly implemented during operation of works.

Sedimentation impacts: Due to the sloping terrain, reservoir sedimentation will occur immediately after the commissioning process. Reservoir sedimentation may occur due to washout, soil erosion in hilly and mountainous areas around or transport of mud and sand from rivers upstream flowing into the reservoir. Sedimentation will occur in the long term, the process should be monitored for remedies.

Impact of waste from agriculture, forestry and aquaculture: Along with the stability of reservoir water, water use activities for agriculture and aquaculture of people may also increase and thereby generate waste (bottles, containers of plant protection products, fertilizers ...), hazardous chemicals (pesticides) and aquaculture feed. This is a long-term source of waste that needs control because water in the reservoir is multi-purpose supply (irrigation, aquaculture). Without control measures, water quality will be significantly affected.

Impact of domestic waste: may arise due to uncontrolled release by people involved in production or reservoir operators. However, this problem is small, easy to control.

Impact of ecological balance: When production develops faster than water supply capacity of the reservoir, strong exploitation downstream will cause ecological imbalance.

PART VI. ALTERNATIVE ANALYSIS

6.1 No project implementation

Song Quao reservoir has been used and operated for 20 years which has shown great effectiveness of economy and society. Recently, this construction has been deteriorating. If without project, risk of dam failure will happen and impact significantly on downstream area including area, population and infrastructure. The commune along River Quao will be affected, of which some households located in flood corridor will be affected directly. According to the survey carried out in 2015, the scope of impact due to water releasing includes 7 communes with 4 ethnic groups consisting of Kinh, Gialay, Khome, Tay. Numbers of the affected people are approximately 4,963. Thus, rehabilitation, improvement and modernization may redress the current situation of damage and deterioration of construction's components. In the long term, dam safety and stability will be increased and ensured; leveling construction up will reduce risk of damage to downstream, perform its tasks and increase the effective use of construction, sustainable development of water resources of River Quao basin

6.2 With project implementation

- **Selecting the alternative of embankment repairing**

For upstream slope: the initial repairing solution is to peel the old riprap because it was damaged and degraded. They are cleaned up for reusing to build a new one with grade of M100. The approximate volume of peeling old structure away upstream slope is 45,900 m^3.

However, after considering the potential impact on reservoir such as sedimentation, impact on aquatic ecosystem, turbidity of water as well as surrounding environment protection, consultant firm proposed a solution to reinforce upstream slope "peeling only and plastering rip – rap at the damaged positions". This solution ensure less environmental pollution (air and water) because not much waste is shipped outside construction site, and waste material is insignificant (The estimated volume of peeling old structure away is 22,900 m^3, accounting for 50% in comparison with initial solution).

- **Selecting location of spillway No.2:**

According to original plans, the location of the second spillway is selected at saddle point with elevation + 92,00m located at the southern edge of the lake, about 4km from the main dam to the west. Downstream of spillway releases water to Tram stream, a tributary to the right of the Cai River. The length of the river adjacent to the main river (Cai River) is about 12 km near the Ma Lam town. Flood discharge corridors is across the Phu Son primary channels, Quao River's main channel and residential areas of Phu Son village, Ham Phu commune, then follows the stream down the Cai river at Ma Lam town. With such a long flood discharge corridors, so releasing water will cause more damage to the downstream are (including 7 communes, with 4 peoples living as Kinh, Gialay, Khmer, Tay. The estimated households affected directly by project are 4,963 households. Moreover, the large open-pit excavation volume (estimated 56.000m^3 types of rock), area of acquired land is large, leading to more environmental impact

Therefore, the selected alternative for location of spillway no. 2 is saddle point with elevation of +98.00 m located in right side of the left dam; water releasing path goes along toe of the left branch dam and enters the downstream's overflow of Song river with length og 2.8 km. Thus, the flood diversion corridor is shorter, excavation volume is small (approximately 23,000m^3 of soils, rocks), less area of used land (equal to 20% in comparison with original plan) that leading to less negative impact on environment. The water flow line behind spillway goes along the current stream; water releasing corridor does not met any important constructions, and also not go through residential area. Moreover, water releasing corridor of this plan is the best choice.

- **The selected alternative of water supply from other sources:**

The construction activities of embankment, spillway no. 2 and upstream slope must drain water water; in this period, reservoir does not ensure water supply for downstream area that resulting in risk of impact on 39,000 ha of arable land of 22, 1000 households living in Thuan Hoa, Ham Tri, Ma Lam town, Ham Chinh, Ham Thang, Phu Long and Phu Hai ward; and it impacts directly on water supply for domestic use of Phan Thiet city.

However, the project owner has plan to supply water for downstream area by taking water from 812-Chau Ta canal of Bac Binh district and Ham Thuan Bac distric, this is a construction using water discharging from Dai Ninh hydro power plant in order to ensure production for 8,500 ha of arable land of 2 districts. In addition, supplying water for drough prevention of 12,000 ha of arable land for the southern communes of Bac Binh district (Song Binh, Song Luy, Tan Binh communes) and the northern communes of Ham Thuan Bac district (Thuan Hoa, Hong Son, Hong Liem) and Song Quao's irrigation area. Therefore, there is no impact on production and water supply for domestic use at downstream.

PART VII. PUBLIC CONSULTATION AND AND INFORMATION DISCLOSURE

7.1. Public consultation objectives

- To get the consent of the relevant agencies, local governments and communities in the sub-project implementation
- To share information about the scope of the project and its impact on the environment and society
- To increase the encourage of the participation in the community for determining the impacts of the sub-project.
- To collect information about the requirement and the responsibility of the local resident and local authority on the proposing mitigation measures of the project owner, or to improve the mitigation measure in pre-construction phase or project design

7.2. Social impact assessment consultation

The social impact assessment consultations with beneficiaries and affected people in the subproject area were carried out in a free, prior, and informed manner. Its results showed that there was broad community support for the subproject implementation.

7.2.1 Summaries of puclic consultation for social impact assessment

Table 7.1: The contents of public consultation

No.	*Dated*	*Location*	*Participants/ women*	*Consultation contents*	*Resonsibility*
1	March 12, 2015	Thuan Hoa CPC,Ham Thuan Bac district	60/9	- Disseminating the Project's information, the invested components; - Consulting the project's impact on economy, society	- Consultant firm; - Local authority; - Investor
2	March 14,2015	Ham Tri CPC, Ham Thuan Bac district	73/11	- Disseminating the Project's information, the invested components; - Consulting the project's impact on economy, society	- Local authority; - Consultant firm; - Binh Thuan irrigation exploitation one member Ltd company; - The affected community and benefited community from project
3	March 24, 2015	Thuan Hoa CPC, Ham Thuan Bac district	60/9	- Disseminating the ESIA's draft; - Consulting the agreement of community for Project	- Local authority; - Consultant firm; - Binh Thuan irrigation exploitation one

				- Consulting the scope of project's impact; - Consulting the positive and negetive impact of subproject on society – economy; - Consulting the mitigation measures of negative impacts; - Consulting the Social issues management plan in construction and operation	member Ltd company; - The affected community and benefited community
4	March 26, /2015	Ham Tri CPC, Ham Thuan Bac district	73/11	- Disseminating the ESIA's draft; - Consulting the agreement of community for Project; - Consulting the scope of project's impact; - Consulting the positive and negetive impact of subproject on society – economy; - Consulting the mitigation measures of negative impacts; - Consulting the Social issues management plan in construction and operation	- Local authority; - Consultant firm; - Binh Thuan irrigation exploitation one member Ltd company; - The affected community and benefited community

7.2.2 Summaries of community's responses in public consultation

Table 7.2: Response of social issues

Date	*Location*	*Responses/ the problem generating*	*Responsibility of subproject owner*	*The proposed mitigation measures*
March 12, /2015 and March 14, /2015	Thuan Hoa CPC, Ham Tri CPC, Ham Thuan Bac district	- The local authorities agree and support to create a favourable condition that subproject is started early		
		- Ensure compensation adequately and correctly for the affected people	- Implemet inventory for the affected assets and compensation	- Implement compensation adeqately, correctly in line with regulations of law
		- Ensure security, social safety in construction	- Implement and monitor the mitigation measures	- Register temporary accommodation for workers at construction site; - Develop the labour

Date	*Location*	*Responses/ the problem generating*	*Responsibility of subproject owner*	*The proposed mitigation measures*
				regulations and work strictly
March 24, 2015 and March 26, /2015	Thuan Hoa CPC, Ham Tri CPC, Ham Thuan Bac district	- In addition to responses in the previous consultation on March 12 and 14, 2015, the local authorities and residents gave some other responses as follows:		
		Ensuring occupational safety and public health at construction site during subproject's construction	Implementing and monitoring the mitigation measures	Equiping fully protective clothes for workers at construction site
		There are vulnerable group in subproject area such as minority, single mom, oder and childdren. They should be paid attention because the negative impacts may occurs in implementation of project	Implementinga nd monitoring the mitigation measures	Attracting the participation of vulnerable group in communication or consultation of their requirement for project is necessary
		Construction activities with negative impacts like spreading of disease due to a large of workers at the same place	Implementinga nd monitoring the mitigation measures	Training, providing information, knowledge for local people to avoid the negative impacts which may occur in implementation of project as well as disease, social evils, social security
		The conflict may occur between the households in downstream and the households at upstream when water contribution is unbalanced. The conflict may also happen due to unsatisfying compensation between the affected households and the households who are not impacted	Ensuring adequate water supply for irrigation and domestic use in construction time	The communicatio method of project's benefit should be considered, in addition, minimizing the damage and ensuring the equality among households in water supply

7.3. Environmental impact assessment consultation

7.3.1 Previous completed public consultation activities

In ESIA preparation of Repair and Improvement for Safety of River Quao reservoir – Binh Thuan Province , consultation rounds with local communities and communes were carried our, are:

a) *Consultant for the sub-project preparation*

On January February 03rd, 2015, Binh Thuan DARD organized the meeting to share information about the environmental and social impacts by the sub-project. The participants participated are:

- Participants are representatives of DARD, DoNRE, DoC, DCST, DoH, DOET, DoCT.
- At district and commune levels: participants are representatives of: Division of agricultural and rural development of Ham Thuan Bac district, Departments of Irrigation, Department of Economics of Phan Thiet city. Representative CPCs: Ham Hiep, Phu Ham, Ham Chinh, Ham Tri, Ham Duc, Thuan Hoa, Thuan Minh Ham Thang, Ham Liem and Phu Hai - Phan Thiet city.
- Binh Thuan Irrigation Exploitation Co.Ltd.

Content of consultation:

- The representative of Binh Thuan Irrigation Exploitation co.Ltd .introduction the objectives, components, scope of works, potential impacts and affected objects of the sub-project.
- Environmental consultant shared information on environmental and social protection policies, the safeguard policies of World Bank that's relating to the proposed sub-project implementation.
- Participant discussed on the consensus for implementing the project, provided the necessary information about the risk/incident that's happened in the past. The identified positive and negative impacts can be occurred and proposing a mitigation measures to minimize environmental and social impacts and the recommendations.

b) Consultation of social – environmental mitigation measures impacts

Consultation measures meeting was carried out on 5/2/2015 to 11/2/2015 at CPC's headquarter with participant participated 129 persons (21% of total participant is women), the social unions of : people's Committees, Fatherland Front Committees Cat Son commune, veterans, Women's Unions, youth Unions, farmers' associations, cooperatives, village leaders, the affected households in the areas.

During the time, environmental consultants discussed on the potential negative impacts on the environment and society during project implementation, identified the objectives and scope of works, proposed a mitigation measures to limit the negative effects of the listed impacts. The participants raised their ideas relating to the impacts, consultants and investors considering the suggestion and incorporating them into the report of ESIA

In addition, Binh Thuan DARD has also sent the official letter and related documents to the project components, solutions to protect environment and local community to the People's Committee and Fatherland Front Committee to request a public consultant time for River Quao sub-project.

The recommendations of the participants are sent to CPC of cat Son commune by official documents (see appendix 3). Also, the subproject' investors has been received the comments from the affected communities, and from the local authority on the proposed mitigation measures. The most concerns are summarized shown in table 7.3.

7.3.2 The response from community consultation

The results of community consultation are (table 7.4):

- All participants participated in the meeting agreed to implement the sub-project, because it will be ensured to handle the of River Quao sub-project, in good condition. The sub-project implementation also reduces the risks for local residents in the rainy season, and protect to 4963 households in water release corridor areas (Investment report 2015);

- The discussed negative impacts on the environment and society are: the affected household, People's Committee and Fatherland Front Committee agreed that the negative effects could be harmed to the environment and society such as the land acquisition, dust and noise increasing, the health safe, security, environmental sanitation in construction areas,, impacts to irrigation areas in construction phase, local road damage due to material and wastes transportation etc, have to limit in order to keep a good environment and social conditions;
- The proposed mitigation measures to reduce negative impact on environment: The transporting materials should avoid night time operation to reduce impact to local resident activities

After receiving consultations of the commune People's Committee and Fatherland Front in areas due to the impacts of the sub-project of Repair and enhance the safety of Quao River Lake, Ham Thuan Bac- Binh Thuan. Binh Thuan Irrigation exploitation commitments to:

- Commit to pay the compensation of affected local infrastructures, road in accordance with the policy of the World Bank and the Government of Vietnam
- Commit to follow the proposed mitigation measures that mentioned in ESIA report of the sub-project
- Commit to keep good contact with local authority to manage worker on site and reduce conflict between worker and local resident, reduce traffic accidences in the local, etc.
- Commit to ensure the local traffic condition in good condition
- Ensure sufficient water supply to resident and irrigation
- Commit to follow the National laws and regulations on environmental protection.

The public consultation document, the recommendations of the CPC's, the commitment of Binh Thuan irrigation project management Unit response to report on the evaluation of environmental and social impacts are in the appendix

7.4. ESIA disclosure

Information disclosure: According to the World Bank's policy on access to information, all draft safeguard instruments, including the ESMP/ESMoP, are disclosed locally in an accessible place and in a form and language understandable to key stakeholders and in Vietnamese and English at the CPO and InfoShop before the appraisal mission. EMP is locally disclosed at the sites and in the Vietnam Development Information Centre of the World Bank in Hanoi

- ESIA report in Vietnamese will be public on website of MARD, CPO, People's Committee of Binh Thuan province. The summary report of ESIA will be sent to Department of Natural Resources and Environment of Binh Thuan province, People's committee of Ham Thuan Bac district, Thuan Hoa CPC and Ham Tri CPC in order to community, organization contact, monitor and implement ESMP .
- ESIA report in English will be public at VDIC of World Bank in Hanoi and InforShop of World Bank

Table 7.3: Summary of community consultation activities for completing ESIA

No	*Date*	*Venue*	*Participants (person/ women)*	*Representative Organization*	*Contents*	*Responsible agency*
1	3/2/2015	Binh Thuan DARD headquarter	23/1	Binh Thuan representatives:: - DARD - DoNRE - DoC - DoCT - DoET - DoL&S - DoF Binh Thuan Irrigation Project Managt. - At district and commune levels - Ham Thuan Bac DARD - Irrigation division - Phan Thiet financial division; - CPC of Ham Hiep, Ham Phu, Phu Ham, Ham Chinh, Tri Ham, Ham Duc Thuan Hoa Thuan Minh Thang Ham, Ham Liem - Ham Thuan Bac, and representatives of the People's Committee of Phu Hai Ward - Phan Thiet City	- Introduction the objectives, components, project areas, potential impacts to local community, local infrastructure of the sub-project and so on. - Sharing information on environmental and social protection policies, the safeguard policies of World Bank that's relating to the proposed sub-project implementation - Discussion on the consensus for implementing the project, provided the necessary information about the risk/incident that's happened in the past. The identified positive and negative impacts can be occurred and proposing a mitigation measures to minimize environmental and social impacts and the recommendations - Consulting the historical incidents (after completion	Binh Thuan DARD; Binh Thuan Irrigation Project Managt. - Environmental consultant - Local organizations

No	*Date*	*Venue*	*Participants (person/ women)*	*Representative Organization*	*Contents*	*Responsible agency*
					of works and its impacts on environment, social)	
2	5/2/2015	Thuan Hoa CPC headquarter	17/3	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer	- Introduction of Project components and final sources - Announced negative impacts on environment and society during the sub-project implementation - Discussion on the issue that happened in the past - Discussed on mitigation measures - Official feedbacks - People's Committee of communes and Fatherland front committee gave feedback in official writing.	- Binh Thuan irrigation project management introduce the target of the discussion - Environmental consultant introduce environmental management plan including mitigation measures, implementation plan and the potential impacts on environment and society in construction and operation phase - CPC and community discussed on the mitigation measure and impacts of the Project, appraisal or not appraisal to the implementation of the Project - Official feedback and consultant document.
3	6/2/2015	Ham Chinh CPC headquarter	13/3	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer - households		
4	9/2/2015	Ma lam town CPC headquarter	18/3	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer - households		
5	10/2/2015	Ham thang CPC headquarter	11/3	- CPC - Women union - VFF - Agricultural unions		

No	*Date*	*Venue*	*Participants (person/ women)*	*Representative Organization*	*Contents*	*Responsible agency*
				- Retired Solder union - Leader of village - Party officer - households		
6	11/2/2015	Phu Hai ward- Phan Thiet city CPC headquarter	13/3	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer - households		
7	12/2/2015	Phu Long CPC headquarter	10/2	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer - households		
8	13/2/2015	Ham Tri CPC headquarter	23/2	- CPC - Women union - VFF - Agricultural unions - Retired Solder union - Leader of village - Party officer - households		

Table 7.4: Summaries feedback form consultant rounds

Date	*Venue*	*Feedback and comment*	*Project owner responsible*	*Mitigation measures*
16/2/2015	Thuan Hoa People's Committee headquarter	- Scope of impact: Agricultural production area; residential are anear construction site - the affected objects: People living near construction site, tree, crop(dragon tree + rice) will be affected during repairing dam due to lack of water - Impact on social security and order, environmental sanitation because construction site is near commune	Mitigation measures of environmental pollution and ensuring security and order should be available in construction phase	- Arranging suitable accommodation for workers and staffs, and management plan for workers should be considered to ensure their health. - A plan of close collaboration between construction site and civil unit , local authority and local people should be availbale to ensure security, environmental saniation of surrounding environment
17/2/2015	Ham Chinh People's Committee headquarter	- Scope of impact: Arable production area, the area along NR 28, the villages at low – lying land along Cai river - The affected objects: The people living along NR 28, arable land, tree, crop (drageon tree + crop) will be affected during repairing seservoir due to lack of water The negative impacts on environment: - Impact on daily life of local people living along NR 28 due to noise and dust generating materail truct, causing damage to local road due to transportation of material - Lack of water in arable production area during repairing reservoir - People and arable production land along Cai river will be affected in case of releasing water	The dust mitigation measure for local people living along NR 28 should be available; Ensuring water supply for irrigation in repairing time	The measures such as covering material truck, transporting at night to avoid impact of daily life of people should be considered; The local people must be announced timely in case of releasing water in order to protect their assets

Date	*Venue*	*Feedback and comment*	*Project owner responsible*	*Mitigation measures*
18/2/2015	Ma Lam CPC headquarter	- Affected areas: agricultural areas, the areas along the QL 28 and resident areas along river Cai - Deficit water for irrigation - Water release effect to agricultural areas and the friut tree plantation of river Cai areas	Ensuring water supply for irrigation in repairing time	- The material transport vehicle have to operate in night time to avoid the impact to local people. The vehicle have to cover during material carrying., watering road surface to reduce dust - Notice the downstream areas about water release
19/2/2015	Ham Thang CPC headquarter	- Scope of impact: agricultural areas, the areas along the QL 28 and resident areas along river Cai - The affected objects: + Local resident, infrastructure along to QL 28 by noise, and dust generating from material transportation + effect to irrigation during construction phase + Water release effect to agricultural areas and the fruit tree plantation of river Cai areas	Ensuring water supply for irrigation in repairing time Building a proper water releasing plan	- The material transport vehicle have to operate in night time to avoid the impact to local people. The vehicle have to cover during material carrying., watering road surface to reduce dust - Notice the downstream areas about water release
20/2/2015	Phu Hai ward People's Committee headquarter – Phan Thiet city	Habour safety	Informing early to local people in case of releasing water	- Notice the downstream areas about water release and ships, vessel in docking place safety
23/2/2015	Phu Long town People's Committee headquarter	Deficit water for irrigation in construction phase	Ensuring water supply for irrigation in repairing time	Use alternative water resources to irrigation during repair and improve the reservoir

Date	*Venue*	*Feedback and comment*	*Project owner responsible*	*Mitigation measures*
24/2/2015	Ham Tri CPC headquarter	- Affected areas: agricultural areas, the areas along the QL 28 and resident areas along river Cai - Local security, environmental sanitation because the construction site located nearby the resident areas of the commune - In case of releasing water at spillway no. 2, it may cause flood to households living along water releasing corridor (20 households of Ham Tri commune)	Reduce dust generating along QL 28 due to material transportation Have to develop a security plan to reduce impacts to the commune. .	- The auxiliary areas and camping site have to locate in dam corridor to avoid land acquisition and compensation and flooding event - Develop a plan of worker accommodation and management to ensure safety and worker health - The material transport vehicle have to operate in night time to avoid the impact to local people. The vehicle have to cover during material carrying., watering road surface to reduce dust - Develop a plan and train local people to respond the case of releasing water at spillway no. 2; - A plan of evacuation, protection for assets of 20 households in case of flood

PART VIII: ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

Potential negative environmental and social impacts of the subproject for "improved safety of Song Quao Reservoir" in each phase of implementation and for each items has been analyzed and evaluated in details in Part V. Activities to repair the main dam, sub-dam, Dan Sách weir, construction and management roads, spillway will be carried out on the existing structures, not changing the capacity of Song Quao reservoir; hence, negative impacts mainly occur in the construction phase. Attention should be paid to adverse impacts due land clearance, compensation, construction of landfills, soil pits, and camps for worker. Activities to repair headwork (main dam, sub-dam, and spillway), disposal, soil exploitation and transportation of waste, materials… will affect not only the workers directly involved in construction but also people in the area. However, most of the negative environmental and social impacts of the subproject are rated at low to moderate level, impacts are local during construction and scope of impacts is not large. Those impacts can be surmounted or mitigated provided that the PMU and construction contractors fully implement measures according to safeguard policies of the World Bank and Government of Vietnam. These policies have been specified in the Project Environmental and Social Management Framework. This management plan is proposed to manage these potential negative social and environmental impacts. The subproject-s RAP report with detail plan will address the impacts related to land acquisition.

8.1 Mitigation measures

The key potential impact and mitigation measures of direct construction-related impacts are summarised in the table 8.1 below:

Table 8.1: Potential Impacts and Mitigation Measures

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
I	**PRE-CONSTRUCTION**				
1	• Temporaty acquision of 37,000m^2 land for dumpfills, storage of soil and rock, construction roads, construction premises; • Permanent acquisition of 164,320m^2, including 162,000m^2 production land and 2,332m^2 residential land	• According to the RAP report, cost for compensation, support to resettlement is: VND 8,821.03 million • Compensation plans should be defined in details in RAP report • Support of rehabilitation and livelihood for farmer households.	- People's Committee of Binh Thuan province. - People's Committee of Ham Thuan Bac district; - People's Committee and Fatherland front committee of of Thuan Hoa and Ham Tri commune - Community monitoring board		
II	**CONSTRUCTION**				
1	Social impacts: potential conflicts with the introduction of 290 workers to the project area and construction activities; impacts on household income, gender impacts from land aquision	• Register the workers to local community • Contract obligate the use of local labour for manual work • Inform and allow land owner to collect the trees and crop before site clearance to get income from these crop products or make use of these materials • Follow Complaint redress procedures for conflict resolution • Plan to supply food to serve workers • Facilitate if local people (women, poor) has	FS consultant, PMU Compensation committee	Contractor	

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
		willingness to supply food to worker for improved household incomes • Engage local mass organisations unions on rights and responsibility to the ESMP monitoring and monitor the compliant of construction contractor • Networking between with mass organisation and local authority, PMU, construction contractors and supervision contractor in order to receive any information on impacts on time			
2	*Impact on gender:* the total number of affected households is 18 (34 male and 43 female). There are 4 households headed by women (accounting for 23.5%), while 1 household headed by single woman raising two small children, this household is also severely affected household losing nearly 70% of production land	• Implement Compensation plan • Create an opportunity to women and affected households to get a job to cover their economic lost in construction phase • Contract local resident to supply foods and water to worker on construction site if feasible			
3	Landscape modification	• Retain fertile top soil for reinstatement at the borrow pit, disposal areas and other disturbed areas • Minimise volume of waste by collecting and use cut down trees for beneficial purpose.			

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
4	Biological impacts • Vegetation clearance, tree cutting, dust affect growth of plants • Impacts on aquatic lives by underwater construction activities, changes in water quality, water level	• Limit site clearance within designated land area and cutting down the trees outside the approved construction area is forbidden • The use of chemical for site clearance is prohibited • Build coffer dam during construction phase to minimise impacts on water quality and aquatic life		Contractor	
5	Increased level of dust and gas emission from excavation and transporation Local households along the transportation route	• Watering road surface to reduce dust • Water vegetation covers around the site • Watering transportation roads, • Cover the material storages areas • Cover the truck during transporting (avoid the materials falling down on road). • Cover soil and material storages areas		Contractor	
6	Noise and vibration 290 workers 50 households living along the access road	• The transportation vehicles, equipment must be maintained periodically. • All vehicles transport materials have to avoid their activities in rush hours and at night time		Contractor	
7	Solid waste management	• Reuse the removed soil layer to plantation and ground levelling • Collect, reuse and recycle excavated materials and construction wastes where possible • Levelling and compact the disposed waste to reduce volume and avoid subsiden risk • Dispose the waste in designated areas only;		Contractor	

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
8	Domestic waste and wastewater generation from camp	• Build adequate sanitation facility at the camp, including septic tank toilet and drainage to ensure there is no stagnant water surrounding the camp • Provide sufficient containers with lids for temporary storage of domestic waste (40kg/d) from the camp • Arrange for regular waste collection and disposal		Contractor	
9	Hazardous generation	• Collecting and handling wasted oil following the hazardous material management regulation • Waste oil are stored in safe containers and away from workers camp • Waste oil containers are stored on water-proof base and protected with roof, warning signs and restrict access • Contact the recycle company for hazardous material management • Return wasted oil to fuel supplier • Do not maintain or repair vehicles at the sites, but in workshop or service business		Contractor	
10	Changes in flow pattern, water quality in Song Quao reservoir and canal system at downstream	• Minimize the solid or rocks falling into reservoir • Install toilets on construction site and camping site. • Wastewater has to collected and treated in accordance with QCVN 09-2009 before		Contractor	

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
		discharge to environment. • After completed construction, all toilet and recycle bin have to sealed off and move out of the construction site.			
11	Increased erosion risks, sedimentation	• Selection the site of borrow pit downstream of water sources	FS consultant		
		• Avoid clearance activity in the rainy weather • Creat and maintain embankment around the borrow pit • Cover excavated and construction materials where possible. • Construction must be started in dry season • Disposal areas have to compact regularly;		Contractor	
12	*Traffic disturbance and increased traffic safety risks,* Increased number of vehicles transporting construction materials (16 equpment and 52,171 trips of 7 to 10 tons loading capacity) will cause traffic congestion, particulary at intersections with NR28, affecting the travelling and production of people in 2 communes of Ham Tri and Thuan Hoa	• Announce the construction schedule on public media • Install and maintain instructions, warning and signage boards • Install and maintain warning and lighting system at night		Contractor	
13	Health and Safety risks for	• Comply with safety regulations according to		Contractor	

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
	workers	Viet Nam Labour law and construction management regulations • Appoint staff responsible for environment, health and safety • Install barrier, fence, warning signboards, restrict access to construction areas			
14	Risk of accidents to workers and communities during the construction phase	• Training to workers on labour safety regulations and provision with adequate protective clothing in accordance with prevailing laws of Vietnam. • Implementation of measures for secured safety, such as protective fences, barriers, warnings of danger and lighting system for preventive traffic accidents as well as other dangers to people and sensitive areas.		Contractor	
15	Impacts of blasting for excavated foundation of spillway no.2	• Compliance with the National technical regulations on irrigation works – Drilling and blasting of rock excavation (NTR 04-04:2012/BNNPTNT) • Creating corridor of blasting area for ensured safety of people • Drilling and blasting will be allowed only when there is availability of blasting blueprint, blasting passport, and measures to ensure safety during blasted construction approved by competent agencies, and concurred by Acceptance Council for blasting preparation		Contractor	

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
III	**OPERATION PHASE**				
1	Water storage: Sedimentation and polluted water in the reservoir may be caused if plant residues are not cleaned up prior to storage;	• Clean-up of plant residues in the reservoir prior to storage. • Limitation of exploitation activities on slopes, reservoir area.		Contractor	
2	Impact due to operation of spillway no.2 : • Causing flood for households living along water releasing corridor (approximately 20 households of Ham Tri commune) • May cause damage to 2 construction: management road to sub dam 1 and a head section of main canal	• Develop a plan and train local people responding to the case of releasing water at spillway no. 2; • Evacuation and protection plan for assets of 20 households in case of releasing water			Binh Thuan exploiting irrigation works One member Company, Ltd
3	Emergency flood drainage: • Flooding of dam safety corridor; • Increased risk of erosion and sedimentation downstream; • Affected production of people in downstream area	• Making plans and training for local people to respond in case of emergency flood drainage; • Prompt notification to local people and authorities of flood drainage schedule, flood level and negative impacts that may occur • There are plans to evacuate and protect the property of people in downstream area in case of necessary flood drainage • There should be infrastructural investments for people during flood drainage, such as			Binh Thuan exploiting irrigation works One member Company, Ltd

No	*Impacts/Risks*	*Mitigation measures*	*Implementation responsibility*		
			Design/preconst.	*Construction*	*Operation*
		public houses, potable water supply facilities,			
4	Risk of dam safety: • Greatly affected hydrological regime of the region, affected water environment, soil environment, aquatic, ecosystem, water supply capacity of irrigated areas, affected agricultural production at downstream of works. • Dam failure may influence on lives and property off 22,100 households in 7 communes/towns at downstream of North Hàm Thuận district.	• Dam safety assessment is needed both before and after the project implementation. • Capacity strengthening for dam management units • Proper performance of operating procedures for ensured safety of reservoirs. • Periodic inspection and maintenance of works according to regulations.			Binh Thuan exploiting irrigation works One member Company, Ltd

Table 8.2: Estimated cost of mitigation measures

No	*Item*	*Budget (million VND)*
1	Land acquisition for return of works protection corridor	8,821
2	Purchasing burlap for covering material trucks: VND 2 mil./ a burlap x 50 burlaps	100
3	Handling solid waste in the construction process: - Cost for purchasing recycle bin : 20 bins x VND 500,000 /bin = VND 10 mil. - Cost for transportation unit to treatment area (2 years): VND 100 mil.	110
4	Advocating people to cooperate and support workers during construction	100
5	- Purchasing medical cabinet for workers (3 cabinets): VND 3 mil. - Periodical health check for workers (6 months/ times): VND 25 mil./times *4 times = VND 100 mil.	103
6	Training for the social organization on rights and duties in monitoring the implementation of Environmental management plan of the construction contractors	200
7	Cost for purchasing recycle bins and labour cost for collecting waste:VND 25 million/ year x 20 years.	500
	Tổng cộng	**1,113**

8.2 Environmental and social monitoring plan

Environmental Monitoring plan includes two types of environmental monitoring:

- Routine environmental monitoring to check compliance to the project environmental management requirements, to identify non-compliance or arisen issues and propose mitigation measures
- Environmental quality sampling for verification of the effectiveness of the mitigation measures, propose corrective measures if environmental quality exceed standards.

8.2.1 Environmental Compliance Monitoring

Environmetnal compliance monitoring should be carried out mostly be observation on regular basis by the construction supervisor and PMU environmental officer. The independent monitoring consultant can also monitore based on the plan described below.

Table 8. 3: Environmental Compliance Monitoring Plan

No.	*Impacts/Risks*	*Parameters to monitor*	*Location/ method*	*Frequency*
1	Land acquisition	Compensation to affected households	Interview affected households	Regular, until farmers are is fully paid
2	Social impacts: potential conflicts with the introduction of 290 workers to the project area and construction activities; impacts on household income, gender impacts from land aquision	• Workers are registed to local authority • Number of local people hired by the subproject • Amount of trees, excavated materials reused • Cases of conflicts between locals and the workers • Income, job, cultivation period, crop yield, water irrigation schedule • Complain and griviance of resident	Interview the workers and the community ownstream areas	Every 6 months
3	*Impact on gender:* the total number of affected households is 18 (34 male and 43 female). There are 4 households headed by women (accounting for 23.5%), while 1 household headed by single woman raising two small children, this household is also severely affected household losing nearly 70% of production land	• Number of women get temporary jobs or business opportunity from the subproject	Interview the contractor, the worker and local community	
4	Landscape modification	• Fertile top soil are retained for reinstatement • Waste are levelled and compacted	all disturbed areas, particularly borrow pit & disposal sites	weekly
5	Biological impacts	• Vegetation and trees are not over cut • Manual vegetation clearance • Coffer dam built for underwater construction activities	Obervation at disturbered areas interview	

No.	*Impacts/Risks*	*Parameters to monitor*	*Location/ method*	*Frequency*
6	Increased level of dust and gas emission from excavation and transporation	• Visibility in the air • Loose construction materials are covered • Trucks carrying losse materials are coverd • Levelling and compaction done		
7	Noise and vibration	• The transportation vehicles, equipment must be maintained periodically. • All vehicles transport materials have to avoid their activities in rush hours and at night time		
8	Solid waste management	• Top soil are retained for reuse and reinstatement • Reuse and recycle are practiced • Waste are Leveled and compacted at disposal site • Waste are loaded in in designated areas only;	Obersations at Construction sites Camp Disposal site	
9	Domestic waste and wastewater generation from camp	Availability and condition of sanitation facility at the camp: toilet, drainage, bins cleaness of the camp and surrounding area	Observation Interview workers	
10	Hazardous management	• Waste oil are stored in safe containers and away from workers camp • Waste oil containers are stored on water-proof base and protected with roof, warning signs and restrict access • Status of contract with hazardous treatment contractor	Observation Interview workers	
11	Changes in flow pattern, water quality in Song Quao reservoir and canal system at downstream	• Adeqate sanitation and drainage facilities are installed in the camp • Wastewater from construction site is managed and not discharged directly into water sources • All disturbed areas are reinstated before construction completion.		

No.	*Impacts/Risks*	*Parameters to monitor*	*Location/ method*	*Frequency*
12	Erosion risks, sedimentation management	• Ground is levelled and compacted • Slops are shaped to enhance stabilisation • Loose construction materials are covered. • Refill the borrow pit after completing construction to serve cultivation		
13	*Traffic disturbance and increased traffic safety risks*, Increased number of vehicles transporting construction materials (16 equpment and 52,171 trips of 7 to 10 tons loading capacity) will cause traffic congestion, particulary at intersections with NR28, affecting the travelling and production of people in 2 communes of Ham Tri and Thuan Hoa	• Local are informed about construction schedule • No accident along access road due to project vehicles or construction activities • Adequate signs, speed control and fence • Allocate staff to direct traffic during rush hours		
14	Damages to existing local road and othe existing rural infrastructure	• Limit load of truck • Road condition is acceptable • No other public service interrupted	Observe and interview	
15	Health and Safety risks for workers	• EHS staff is appointed • Adequate fence, sign, and lighting at the site • First aid kit available • Workers using adequate protective clothings while working	Observe and interview	
16	Health and safety risks for local community	Adequate fence,warning signs, and lightings at the site	observeation	

No.	*Impacts/Risks*	*Parameters to monitor*	*Location/ method*	*Frequency*
17	Impacts of blasting for excavated foundation of spillway no.2	• Compliance with the National technical regulations on irrigation works – Drilling and blasting of rock excavation (NTR 04-04:2012/BNNPTNT) • Creating corridor of blasting area for ensured safety of people	observeation	
18	Water storage: Sedimentation and polluted water in the reservoir may be caused if plant residues are not cleaned up prior to storage	• Clean-up of plant residues in the reservoir prior to storage. • Limitation of exploitation activities on slopes, reservoir area. • All construction wastes in the reservoir are collected and transported to disposal site	observeation	

8.2.2 Environmental Monitoring Program

The contents and frequency of monitoring are performed in table 8.4

Table 8.4: The content of environmental and social monitoring programs during project implementation

Scope of works	*Parameters*	*Location*	*Method base*	*Frequency*
I/ Monitoring the management of waste sources				
Nguồn phát sinh	- Volume of solid waste - Number of toilets, campsite, wastewater treatment system - Volume of hazardous - Waste composition;	- Campsite for workers - Disposal site		3 months/ times
2. Management measure of waste generating	- Number of recycle bin - Bill of collecting, transportation waste service, .	- Construction site, campsite for workers - Disposal site		3 months / times
II/ Construction phase				
The Air quality monitoring	The air quality monitoring: vibration, noise; LAeq; total suspended dust (TSP), SO2; CO; NOx.	- KK1, KK2, KK3, KK4, KK5: at the access road 1, 2, 3, 4 and 5 - KK6: at expected camping site and the material storages of the embankment dam - KK7: at expected camping site and the material storages of auxiliary dam 1, 2 and spillway 2 - KK8: at the construction material areas (borrow pit and quarry material areas) - KK 9:the intersection of QL28 and TCQL 5(the transporting material roads) - KK 10: the intersection of QL28 and TCQL 15(the transporting material	QCVN 05:2009/BTNMT- National technical regulation on ambient air quality QCVN 26:2010/BTNMT- National Technical Regulation on Noise	3months/ times periodically

Scope of works	*Parameters*	*Location*	*Method base*	*Frequency*
		roads) - KK 11: the intersection of QL28 and the transporting material roads - KK 12: at expected camping site and the material storages of Dan Sach dam		
Surface water monitoring	pH; DO; TSS; TDS; COD; BOD5 (20^0C); $NO3^{-}$, $NO2^{-}$, PO_4^{3-} , grease; Coli. form	**Surface water:** - NM1: water in Quao river at the located spillway 1. - NM2: water in Quao river (pointed at Quao bridge). - NM3: water in irrigation canal in front of outlet work of Quao reservoir. - NM4: water in irrigation canal in front of outlet work of Quao reservoir (nearby spillway 2). - NM5: water in irrigation canal along the TCQL1 road (nearby power house). Water in reservoir**:** - NH1: water in Quao reservoir nearby the expected camping site and the material storages of the embankment dam constructions - NH2: water in Quao reservoir nearby the expected camping site and the material storages of the auxiliary dam and spillway constructions. - NH3: water in Quao reservoir at the location spillway2 - NH4, NH5: water in Quao reservoir at the right abutment and left abutment. - NH6, NH7: water in	QCVN 08:2008/BTNMT-National technical regulation on surface water quality	3months/ times periodically

Scope of works	*Parameters*	*Location*	*Method base*	*Frequency*
		Quao reservoir at the auxiliary dam 1 and 3 - NH8: water in Quao reservoir in front of Dan Sach dam		
Ground water monitoring	pH; CaCO3; Coli. form; E.Coli; Fe; Pb; As; Mn…	- NG1: from the dug well in Mr. Son household, Dan Hoa village, Thuan Hoa commune. - NG2: from the dug well in Mrs. Xuan household, Lam Giang village, Ham Tri commune. - NG4: from the dug well in Mr. Quy household, nearby QL28, Ham Phu commune. - NG5: from the dug well in Mr. Chan, Ma Lam commune.	QCVN 09:2008/BTNMT- National technical regulation on underground water quality	3months/ times periodically
Sludge and soil environment monitoring	As, Cd; Cu; Pb; Zn.	**Soil sample:** - D1, D2, D3, D4, D5: the agriculture land near the construction road 1,2,3,4,5. - D6: the agriculture land near the expected disposal areas. - D7: Soil samples at the expected location mines - D8: the agriculture land at downstream of Quao reservoir. - D9: Soil samples nearby spillway 2 - D10: Soil samples nearby Dan Sach dam.	QCVN 03:2008/BTNMT- National technical regulation on the allowable limits of heavy metals in the soil QCVN 15:2008/BTNMT: National technical regulation on the pesticide residues in the soil.	3months/ times periodically
III/ Monitoring the impacts on society				
Social impact	- Income, job, number of crop seasons, average yield of a crops, water supply schedule - Feedback,	Area of surround communes		3 months/ times

Scope of works	*Parameters*	*Location*	*Method base*	*Frequency*
	complaint of local people			
IV/ Monitoring environmental sanitation and occupational safety				
1. Environmental sanitation	- Number and condition of toilet - Number and conditions of sanitary equipments - Medicine cabinet - Health service - Number of people suffered from disease - Plan of public health communication	- Construction site - Campsite of workers - Material storage area		3 months/ times
2. Occupational safety	- Number of working equipments - Safety signs - Number of accidents	- Construction site - Campsite of workers - Material storage area - Disposal site		3 months/ times

Estimated cost for Environmental and social monitoring: **1,803,000,000 VND.** See table 8.5.

Table 8.5: Estimated cost for Environmental and social monitoring

Unit: VND x 1.000

No.	*Categories*	*Unit*	*Vol.*	*Price*	*Auditing*
I/	Expert salary				***448.000***
1	Leader	month	4	25.000	100.000
2	Environmental expert	month	4	18.000	72.000
3	Hydrology expert	month	4	18.000	72.000
4	Ecological expert	month	4	18.000	72.000
5	Social expert	month	4	18.000	72.000
6	Assistant (3 persons x 4 month	month	12	5.000	60.000

No.	*Categories*	*Unit*	*Vol.*	*Price*	*Auditing*
II/	**Sampling and on-site monitoring**				***344.000***
1	Perdiemt (8 person x 10 day x 8 times)	day	640	350	224.000
2	Renting vehicle (10 day x 5 times)	day	80	1.500	120.000
III	**Sample analysis**				***466.510***
1	Water surface	sample	104	1.148	119.371
2	Ground water	sample	40	3.854	154.148
3	Soil and sludge	sample	80	2.077	166.168
4	Air samples	sample	96	279	26.822
IV	**Logistic**				***72.000***
1	Office material		8	3.000	24.000
2	Document printing out		8	5.000	40.000
3	Communication	times	8	1.000	8.000
V	**Management fees (50%)**	***%***	***0.5***	***448.000***	***224.000***
	Total (I+II+III+IV+V)				1.542.472
	Before tax	%	6		92.548
	VAT	%	10		154.247
	Total				**1.803.000**

8.3 Capacity Building, Training activities

This programs are focusing on improve the PPMU staffs and other knowledge on environmental and social management and techniques.

Table 8.6: Training program on environmental management

No.	*Contents*	*Implementation budget (VNĐ)*
1	Sageguards policies of environmental and social of the sub-project	1course * 30 participant = 30 Mill.
2	Improving knowledge on environmental protection	1 course * 50 participant = 50 Mill.

3	Building capacity on ESMP and ESMoP	1 course * 50 participant = 50 Mill.
4	Training on environmental health and safety measures	2 course * 100 participant x 50 Mill./course = 100 Mill.
5	Training on improving of gender equity	2 course * 100 participant x 50 Mill./course = 100 Mill.
Total		**VND 330,000,000**

8.4 Monitoring report requirement

Environmental and social monitoring reports are conducted continuously during the subproject monitoring program and the effectiveness of monitoring of the proposed mitigation measures

Table 8.7: Reports requirement

Responsibility for Preparation	*Report*	*Content*	*Frequency*	*Submission to*
Contractor	Risk/accidents	Collecting information about the risks/accidents	within 24 hour since the risks/accident happen	PPMU and CSC
	Infringe	Report infringes on the environmental and social management regulations	Within a week since the risks/accident happen	PPMU and CSC
	Archaeology discovery	Reporting to the relevant agencies on the new archaeology discovered (if any)	Within 24 hours	PPMU and CSC and Local Cultural Department
	compliance with ESMP covenants	Reporting on the effectiveness of ESMP mitigation measures	Every month	PPMU
CSC	Reporting on the ESMP mitigation measures implementation	Effectiveness of ESMP mitigation measures of CSC the results obtained and method applied to solve the accident and remain issues from the last report	Every month	PPMU
Independent Environmental Consultant	Independent reporting on the ESMoP	The result of on-site monitoring The monitoring results based on community	Every 3-6 months	PPMU and WWB

Responsibility for Preparation	*Report*	*Content*	*Frequency*	*Submission to*
		The results from CSC The results from environment monitoring The result obtained from ESMP implementation and comments		
PPPMU	Report of environment activities of the sub-project	The results of ESMP implementation	Every6 months	CPO and WB

8.5 ESMP Implementation responsiblities

Key responsibilities of PPMU and the contractors are as follows:

a) The responsibility of project owner/PPMU

PMU, representative of the IA, will be responsible for monitoring the overall project implementation, including environmental compliance of the project. PMU will have the final responsibility for ESMF implementation and environmental performance of the project during both the construction and operational phases. As the subproject owner, PPMU is responsible for implementation of the all the ESMP/ESMoP activities to be carried out under the project, including fostering effective coordination and cooperation between contractor, local authorities, and local communities during construction phase. PPMU will be assisted by the environmental staff, and CSC/or field engineer. Specifically the PPMU will closely coordinate with local authorities in the participation of the community during project preparation and implementation, monitor and supervise ESMP implementation including incorporation of ESMoP into the detailed technical designs and bidding and contractual documents, ensure that an environmental management system is set up and functions properly, be in charge of reporting on ESMP/ESMoP implementation to the IA and the World Bank.

b) Construction contractor

The construction contractors are responsible for implementing mitigation measures and the mitigation costs will be part of the contract. Take actions to mitigate all potential negative impacts in line with the objective described in the ESMP. In order to be effective in the implementation process, PMU will establish an Environmental Unit with at least two environmental staffs to help with the environmental aspects of the project, including ESMP at the working site, actively communicate with local residents and take actions to prevent disturbance during construction.

c) Construction Supervision Consultant (CSC) and/or Field Engineer

The CSC will be responsible for routine supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts and the EMP. The CSC shall engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor’s performance

d) Independent Environmental Monitoring Consultant (IEMC)

IEMC will, under the contract scope, provide support to PMU to establish and operate an environmental management system, offers suggestions for adjusting and building capacity for relevant agencies during project implementation and monitor the Contractor's EMP implementation in both construction and operation stages. IEMC will also be responsible to support PMU to prepare monitoring reports on EMP implementation. The IEMC shall have extensive knowledge and experience in environmental monitoring and auditing to provide independent, objective and professional advice on the environmental performance of the project.

đ) Local community

The local community supervision Board has been established according to "Decision No.80/2005/QĐ-CP dated 18/04/2005 of Prime Minister on investment supervision statutes of community". The community supervision Board of commune has right and responsibility for supervising construction activities, negative impacts to environment caused by construction activities and guarantees the measures to minimize potential adverse impacts have been implemented effectively by contractor. In case of arising environmental problems that affect to community, they will report to scene Supervision Consultant and/or PPMU by filling in forms reflect information on environmental safety.

e) Responsibility of reservoir management and development agency

Take responsibility for maintenance and periodic supervision of project works and report to DoNRE

f) Responsibility of CPO

CPO will guide PPMU staffs to carry out environmental and social management plan of subproject. Supervising the progress of subproject during construction time and the first year of operation is neccesary.

g) Province and District People's Committees (PPCs/DPCs), Provincial DONRE

Oversee implementation of subprojects under recommendations of DONRE and PPMU to ensure compliance of Government policy and regulations. DONRE is responsible for monitoring the compliance with the Government environmental requirements.

8.6 ESMP Implementation budget

Table 8.8: Budget of ESMP implementation

No	*Item*	*Budget (VND)*
1	Mitigation measures	1,113,000.000
2	Independent Monitoring	1,803,000,000
3	Capacity Building	330,000,000
	TOTAL	**2,246,000,000**

CONCLUSION, RECOMMENDATION AND COMMITMENT

1.Conclusions

The subproject upgrading and safety guarantee of River Quao reservoir, Binh Thaun province is necessary. The project construction can cause the potential positive and negative impacts during project implementation:

Impacts on physical environmental:

Air quality: Dust emissions from the construction works, earthworks, material transportation impact on ambient air quality. However, these effects are not long-term impact, the impacts is gone after completing work in the areas.

Noise, vibration: arising from vehicles, construction machinery. However, due to noise propagation in air and decreases with distance, sub-project area is located far from residential areas so that the impact can be negligible

Water resources: Wastewater generated from construction activities and activities of workers. If not collected in right method, it will increase the pollution into the water resources

Impact on social environment:

The negative impacts on social environmental can not avoidable, especially when operation of spillway no. 2 may cause flood to 20 households of Ham Tri commune. However, releasing water at spillway no. 2 is very rare (1 times/ 100 years) because it works with flood exceeding frequency of P=1%. Hhowever, the project owner shall cooperate with the local authorities and make a request to the contractor to apply a good mitigation measure to reduce these impacts on social and have to implement management plan of socio-environmental monitoring

Reducing the negative impact of the project on the socio-environmental effectively is not only by the project owner but also all the community, the local authorities, the provincial agencies and the environmental protection agencies in particular. And, it must be a increase the local knowledge on environmental and social protection, especially the people living in sub-project area.

The implementation of the subproject brings more positive effects than negative for society. The sub-project ensures water supply for agricultural activities, creating more jobs and increasing income of the population, thereby promoting the economy sector in the areas. Importantly, the project provides safety and flood control to downstream areas, to ensure the safety of thousands of people living in downstream

2. Recommendation

Repairs, upgrades to the existing construction will impact on the environment - society, thus It needs cooperating between all parties in the local, especially between the investor and the local government.

- Proposing the collaboration between environmental protection agencies in Binh Thuan and Project Management Unit on monitoring the implementation, the compliance mitigation measures, and environmental management programs in the differences phases of the sub-project implementation.
- CPCs of Ham Tri, Thuan Hoa have to establish the cooperation to implementing communication programs, information dissemination and the project implementation plan to the people, also to support and assistance to the subproject. At the same time, the project

owner and CPCs have to organize the training program to increase local knowledge on environmental protection, monitoring and household economic development

3. Commitment of Project Owner

The project owned has to follow the regulation to protect environmental and social in different phase of the sub-project, are:

- Conform strictly and guarantee environmental parameters in accordance with Vietnam standards (National technical norms/Vietnam standards) follows current regulations on environmental quality parameters of QCVN 05-2009/BTNMT and QCVN26:2010/BTNMT
- Perform all measures to project water source and environment of wastewater QCVN 14:2008/BTNMT (B).
- Collect and treatment of solid waste, hazardous waste generated during the construction phase in compliance with the regulations for hazardous waste by Circular No. 12/2011 / TT - BTNMT April 14, 2011 of the Ministry of Natural Resources and Environment regulations on hazardous waste management.
- Implement fire safety measures during the construction phase.
- Commit follow the proposed mitigation measures in construction activity.
- Follow the regulation and penalty of environmental management agency of the local governments on environmental issues if any during repairing and rehabilitating Song Quao reservoir
- Compensate and recover the issue generating by the project on environmental and social
- Commit repair all damaged roads during construction due cause.
- Implement the monitoring program, environmental management, regularly

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2. Stratergy environmental impact assessment of project " Irrigation development planning of Binh Thuan province from 2011-2020";
3. Department of Natural Resources and Environment of Binh Thuan province: *"Environmental current status report of Binh Thuan from 2005-2009"*, 2010;
4. Department of planning and investment of Binh Thuan province, *"Overall planning of social – economic development of Binh Thuan province by 2020"*.
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6. Nguyen Dinh Hee, *"Environment and sustainable development",* Hanoi eduction publisher, 2006;
7. Statistic year book of Binh Thuan province, 2013;
8. Environmental Assessment Guidelines, Asian Development Bank, 2003.
9. Environmental Assessment Sourcebook, Volume II, Sectoral Guidelines, Environment, World Bank, Washington D.C, 1991
10. P.A. Economopolous, Assessment of Sources of Water, Solid, Air and Land Pollution Sources, WHO, Geneva, 1993

APPENDIX

APPENDIX A – ENVIRONMENT

Appendix A1- Drawing of the main works

Appendix A2-Types of Map

Appendix A3- Policyframework, institution and regulation

Appendix A4- Environmental and social screening

Appendix A5- Diagram of sampling and monitoringenvironment

Appendix A6-Analysis results of environmentalsamples

Appendix A7- Publicconsultation minutes

Appendix A8- Environmental Specifications (for inclusion in bidding and construction contracts)

Appendix A9- Chance Find Procedures

Appendix A10- Pictures of current status of subproject area

APPENDIX B – SOCIAL

Appendix B1- Methodogical note

Appendix B2- Public Health intervention Plan

Appendix B3 – Public consultation, participation and communication strategy

Appendix B4- Gender action plan

Appendix B5- Grievance redress mechanism

Appendix B6- Information disclosure, account ability and monitoring

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APPENDIX A1 – DRAWING OF THE MAIN WORKS

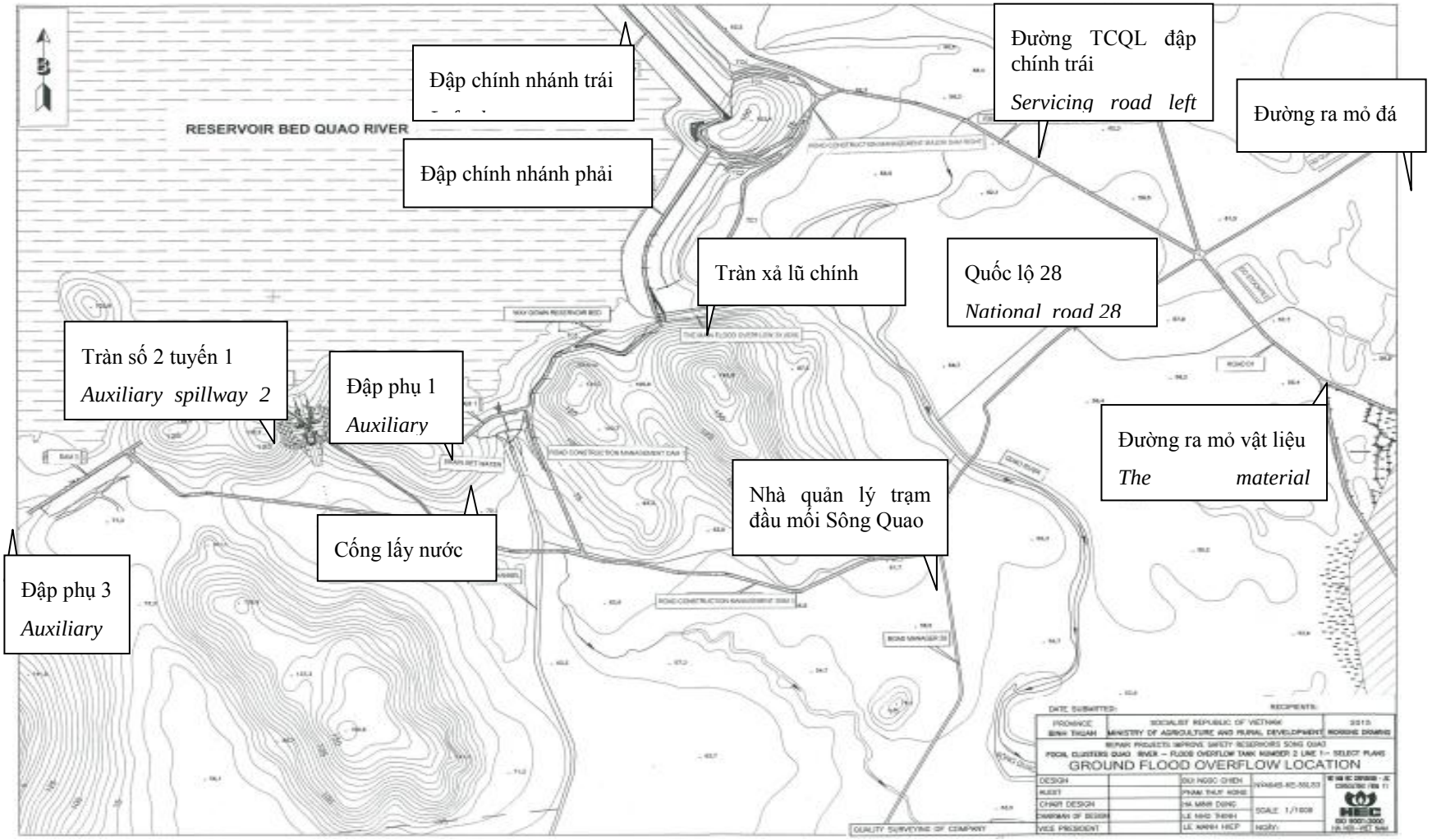

Figure 1.1: Drawing of dam's layout plan

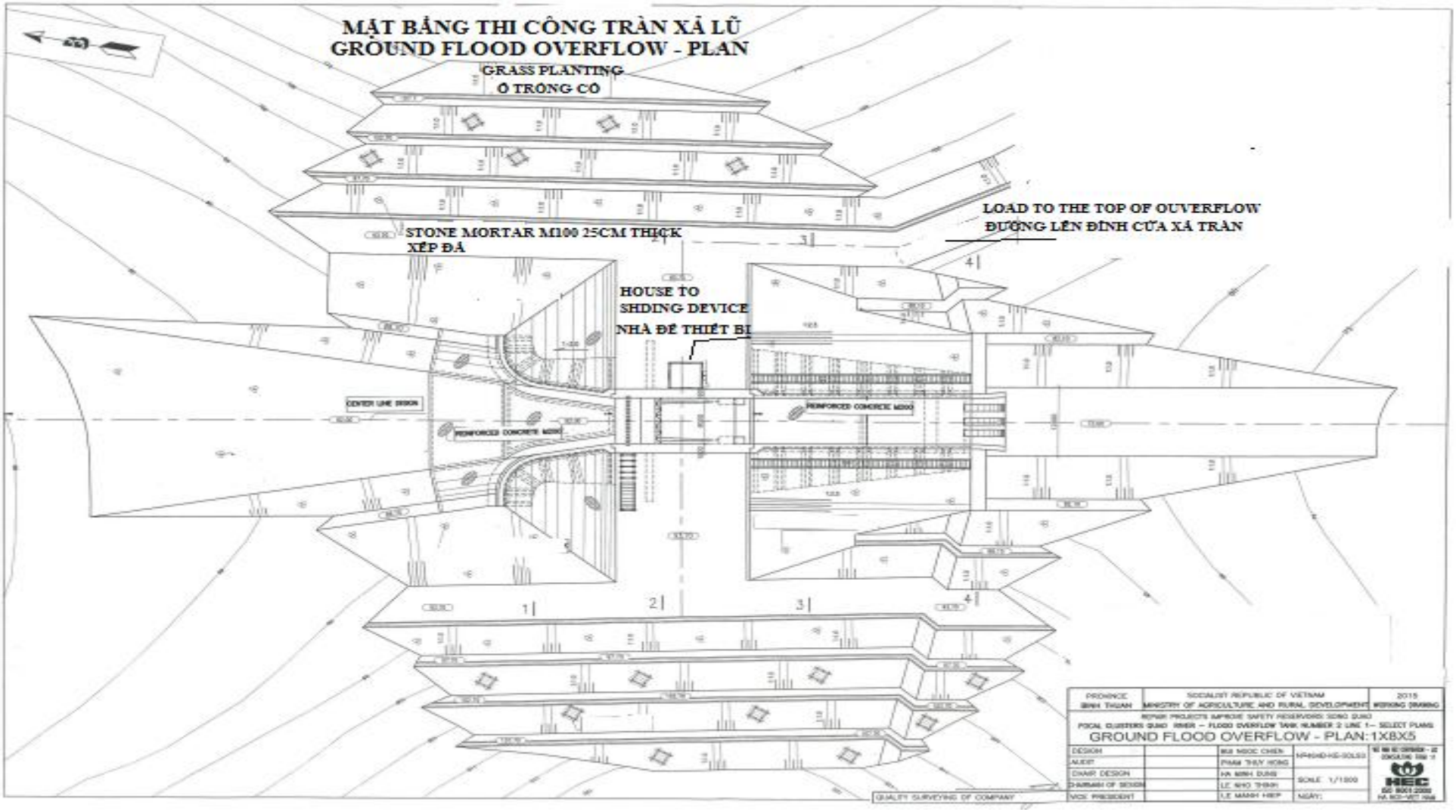

Figure 1.2: Drawing of spillway

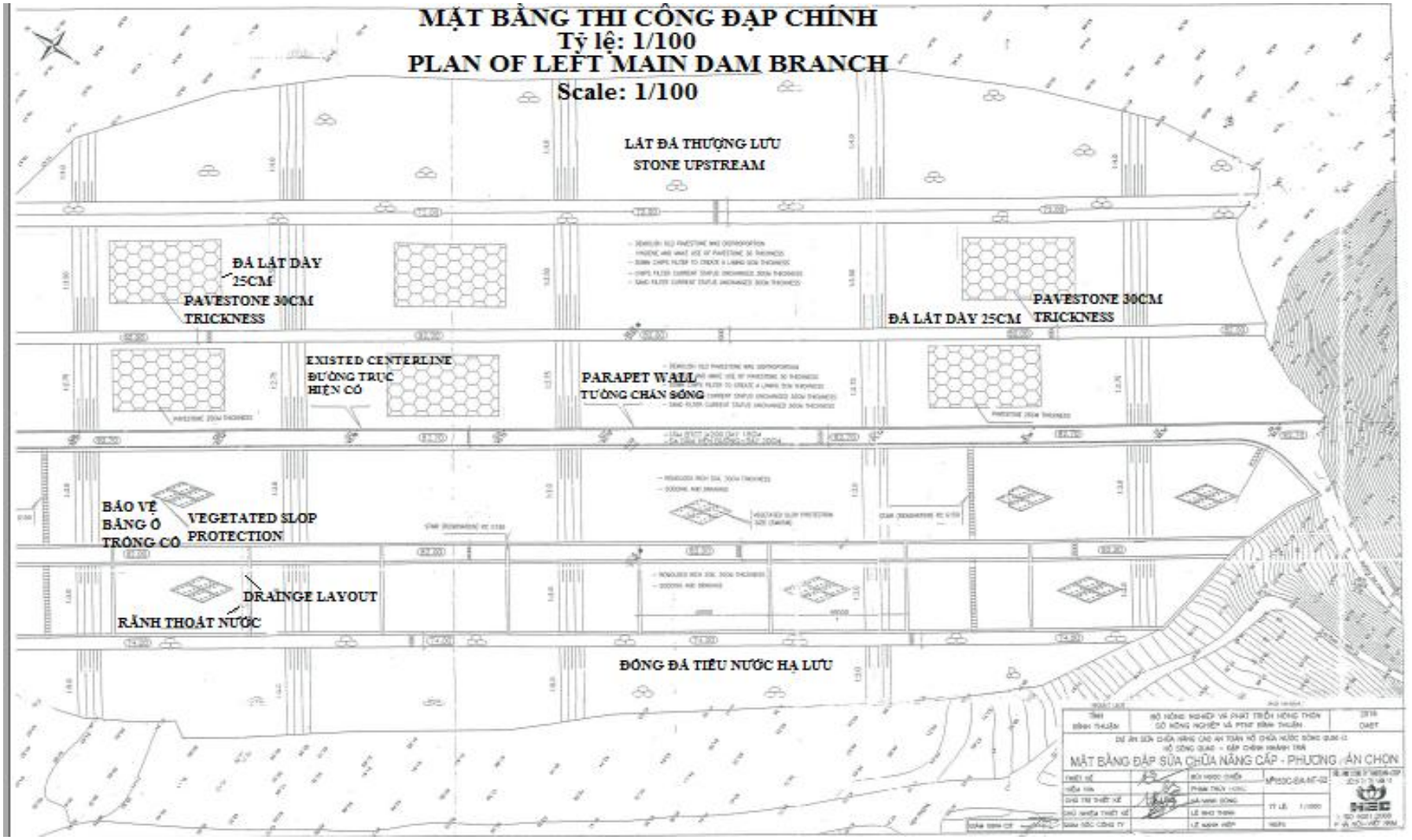

Figure 1.3: Drawing of embankment dam

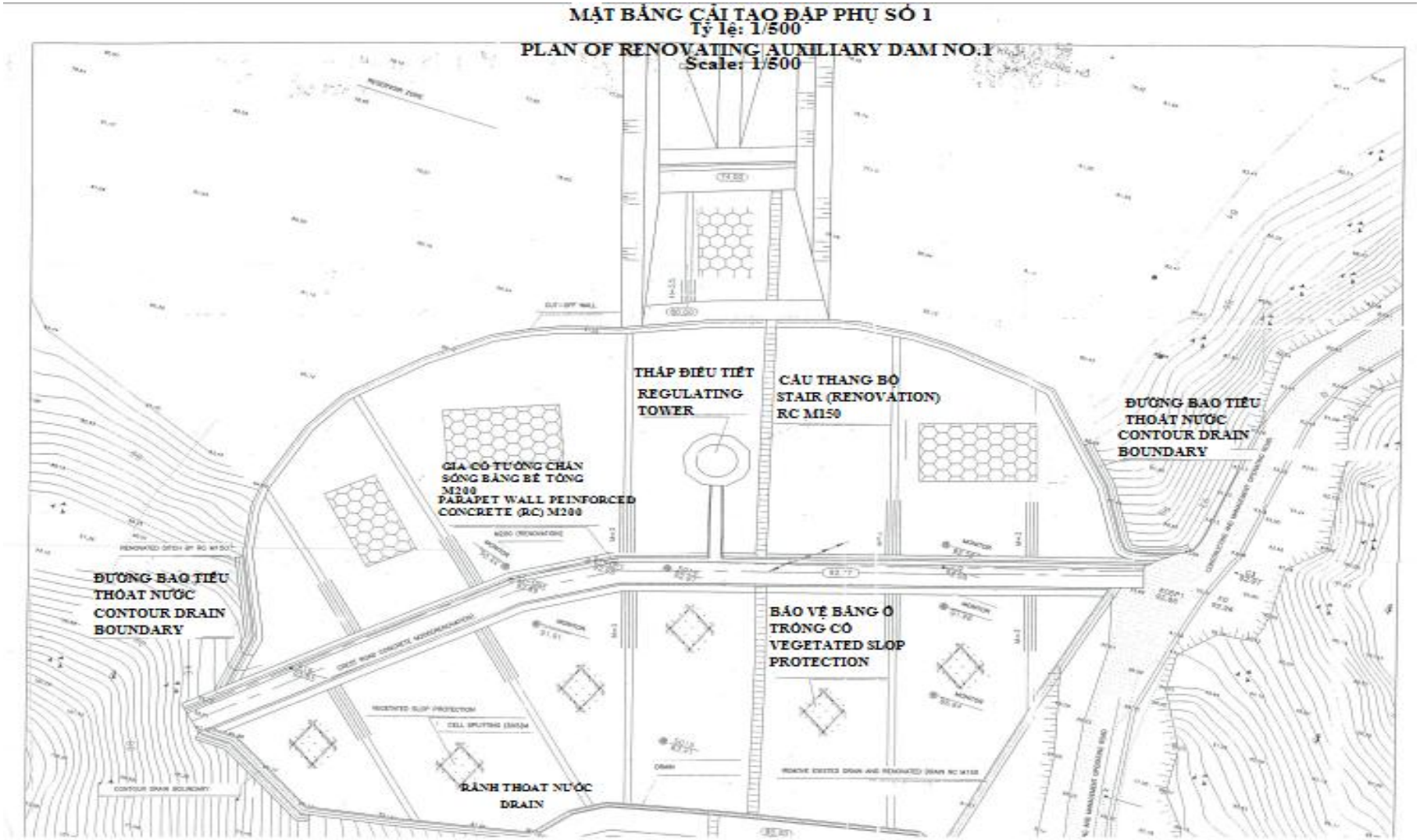

Figure 1.4: Drawing of auxility dam no.1

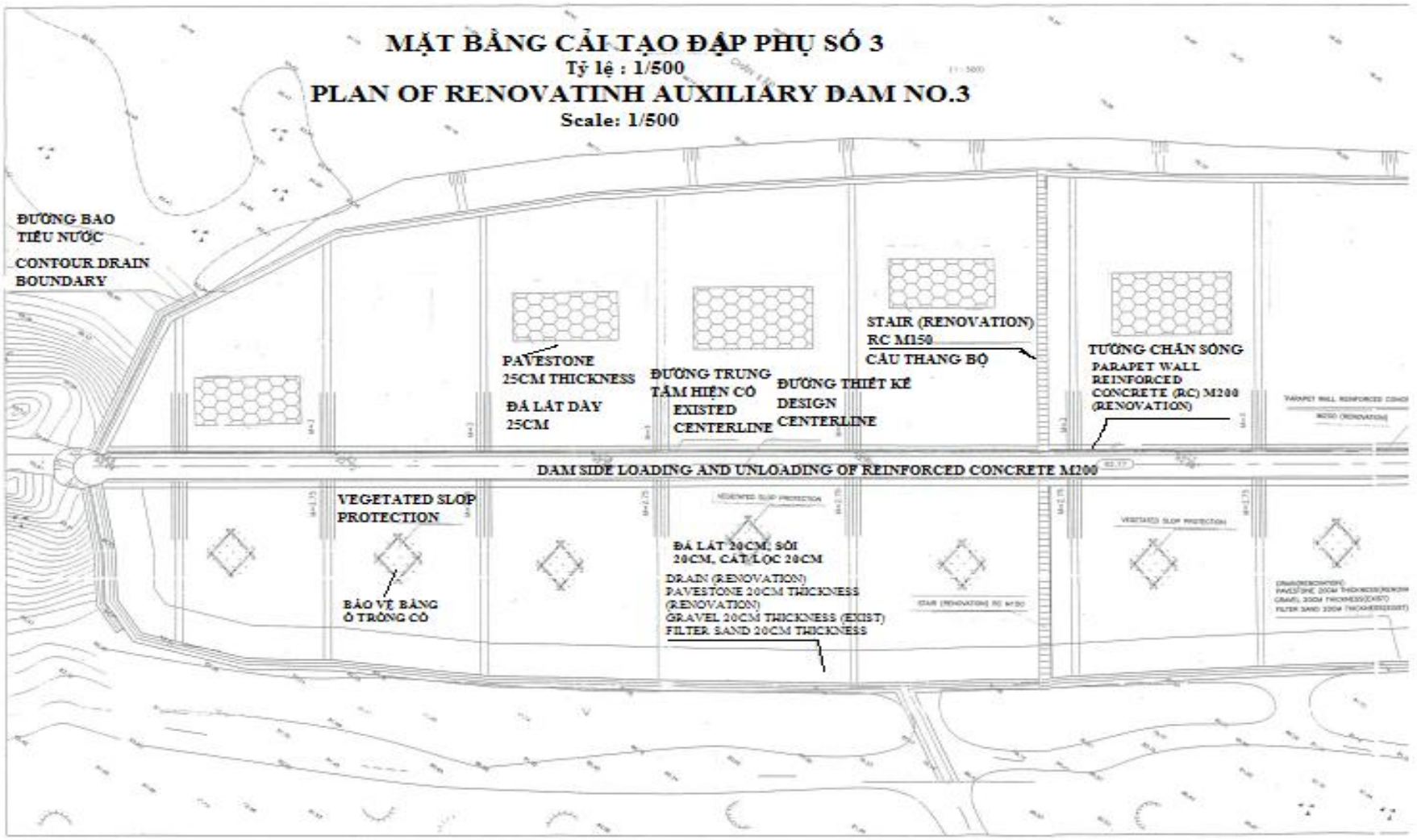

Figure 1.5: Drawing of auxility dam no.3

APPENDIX A2: MAPS

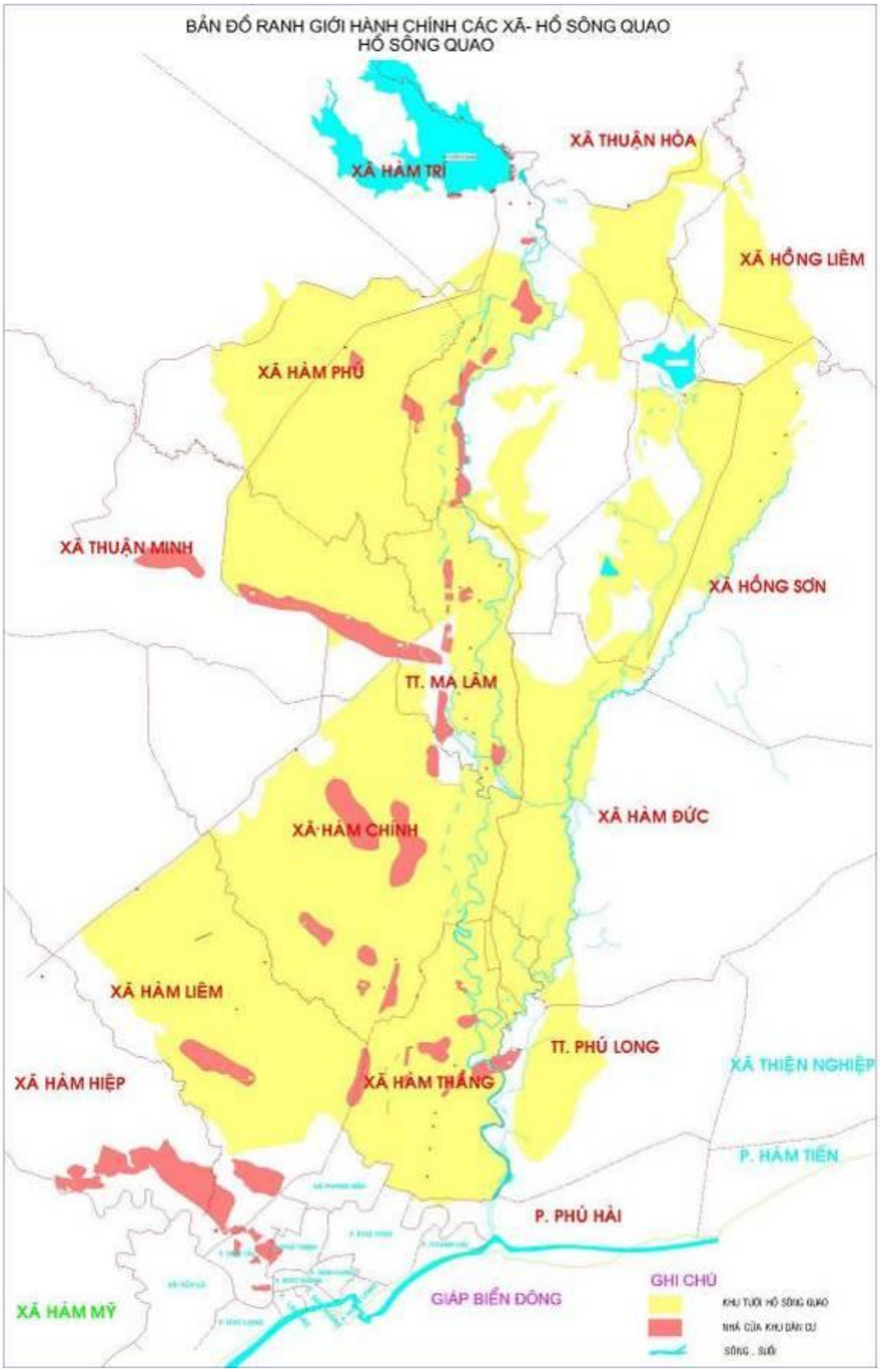

Figure: Map of irrigation area of Song Quao reservoir

APPENDIX A3: POLICIES, INSTITUTIONAL AND REGULATIONS

Applicable National policies, legals and administrative frameworks

i) Environment

- Law of environmental protection no. 55/2014/QH13, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment. Environmental report should be carried out simultaneously with the establishment of investment projects (Feasibility study report).
- Decree no.18/2015/ND-CP on dated 02/14/2015 regulations on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plan.
- Directive no.26/CT-TTg on dated 25/08/2014 regards on to implement the Law of Environmental Protection.
- Circular no.01/2012/TT-BTNMT, March 16/2012 regarding regulation on the establishment, evaluation, approval and inspection and certification of the implementation of environmental protection projects in detail, establishment and registration schemes for simple environmental protection.
- Decree no.29/2011/ND-CP dated April 18/2011 regarding regulations on strategic environmental assessment, environmental impacts assessment and environmental protection commitments.
- Circular no.16/2009/TT-BTNMT on dated 07/10/2009 by the Ministry of Natural Resources and Environment, regarding regulations, national technical regulations on the environment, air quality and a number of toxic substances in the ambient air.
- Decision no.22/2006/QD-BTNMT on dated 25/12/2006 by the Ministry of Natural Resources and Environment regarding on the applying the set of Vietnam standards environmental.

ii) Land use and land acquisition

- Land law no.45/2013/QH13 approved by National Assembly of the Socialist Republic of Vietnam Assembly on date 29/11//2013.
- Decree no.43/2014/ND-CP on dated 05/15/2014 regarding on implementing of the Land law 2013.
- Decree no.44/2014 /ND-CP on dated 15/05/2014 regulating method of valuation of land; construction, land price adjustment; specific land valuation and land valuation advisory.
- Decree no.47/2014/ND-CP on dated 05/15/2014 concerning on the provisions on compensation, support and resettlement due to land acquisition.
- Decree no.37/2014/ND-CP dated 30/06/2014 giving more detail information of compensation, support and resettlement when the land acquisition.
- Circular no.23/2014/TT-BTNMT 05/19/2014 regarding on regulations of land use rights, owners house and properties on land.

iii) Construction

- Construction Law no.50/2014/QH13 on 08.18.2014 approved by the National Assembly of the Socialist Republic of Vietnam.
- Decree no.15/2013/ND-CP dated 02/06/2013 on the construction quality management.

- Decree no.207/2013/ND-CP dated 11/12/2013 on supplementation some articles of Decree no.48/2010/ND-CP of May 7/2010 of the Government on the construction contract.
- Decree no.12/2009/ND-CP dated 10/02/2009 on the construction projects management and investment.

iv) Water resources, forest protection, cultural and heritages, biodiversity

- Law of Water resources, approved by Vietnam Assembly on 21/06/2012.
- Decree no.42/2012/ND-CP dated 11/05/2012 by Government on the management and use of land for paddy rice cultivation
- Decree no.112/2008/ND-CP dated 20/10/2008 by Government on the integration of management, protection and exploitation of hydropower reservoirs and irrigations.
- Decree no.120/2008/ND-CP dated 01/12/2008 by Government on the river basins management
- Decree no.149/2004/ND-CP dated 27/07/2004 by Government regulates the license of exploration, use of water resources and wastewater discharge into water resources.
- Law of Forest Protection and Development no.29/2004/QH11 approved by the National Assembly of the Socialist Republic of Vietnam on 03/12/2004.
- Decree no.23/2006/ND-CP dated 03/03/2006 of the Government regarding on the Law of Forest Protection and Development implementation.
- Decision no.57/QD-TTg dated 09/01/2012 approved by Vietnam Prime Minister to forests plan protection and development by 2011-2020.
- Cultural Heritage Law no.28/2001/QH10 approved by the National Assembly of the Socialist Republic of Vietnam on 07.12.2001.
- Biodiversity Law no.28/2008/QH12 approved by the National Assembly of the Socialist Republic of Vietnam on 13/01/2008. Chapter III Conservation and sustainable development of natural ecosystems, and Chapter IV Conservation and development of wildlife.

v) Dam safety regulations

- Circular no.34/2010/TT-BTC by the Ministry of Industry and Trade dated October 7/2010 regarding regulations on dam safety management of hydropower projects
- Decree no. 72 /NĐ-CP on date 07/05/2007 of the government of Vietnam on dam safety management. According to the decree, a big dam is the dam with the height calculating from the floor face to the top of the dam equal to or greater than 15 meters or dam of water reservoirs with the scale of capacity equal to or greater than 3,000,000 m3 (three million cubic meters). Small dam is the dam with the height calculating from the floor face to the top of the dam smaller than 15 meters and creating water reservoirs with the scale of capacity smaller than 3,000,000 m3 (three million cubic meters). The works relating to water reservoirs include: water intake, outlet works, flood discharge works, Locks. Dam owners are organizations and individuals owning dams to harness the benefits of water reservoirs or assigned to manage, operate and harness water reservoirs by the competent state agencies. The Ministry of Agriculture and Rural Development takes responsibility before the Government for the implementation of state management of dam safety. The Ministry of Industry presides over and coordinates with ministries, branches and relative localities to appraise, approve or submit to the Prime Minister for approval of the process of operating hydropower reservoirs. The provincial-level People's Committees implement its state management on dam safety in the areas.

- Document no. 1852/BNN-TCTL on dated 10.06.2014 of the Minister of Agriculture and Rural Development on urgent repairs financial to ensure safe water reservoirs

vi) Resettlement policies

- Decision no.52/2012/QD-TTg, dated November 16/2012, on the support policies on employment and vocational training to farmers whose agricultural land has been recovered by the State.
- Decree no.84/2007/ND-CP of the Government of Vietnam on revision of issuing LURC, land acquisition, implementation of land use right, procedure for compensation, resettlement when land acquired by State and grievance redress
- Circular no.37/2014/TT-BTNMT dated 30 June 2014, regulating compensation, assistance and resettlement when the State acquires land.
- Circular no.37/2014/TT-BTNMT dated 30 June 2014, regulating compensation, assistance and resettlement when the State acquires land.
- Other regulations or administrative decisions related to resettlement plan to be issued by HCMC People's Committee in relation to the Land Law 2014, and its relevant decrees and circulars.
- Decree no.69/2009/ND-CP of government, dated 13 August 2009 on regulating additional planning of land use, land prices, land acquisition, compensation, assistance and resettlement.

vii) Gender policies

- Law 73/2006/QH11 On gender equality the national assembly of the socialist republic of Vietnam 10th session of the xi legislature Published Date 29/ 11/2006
- Decree no.07/2007/ND-CP of January 12/2007 detailing and guiding the implementation Of A Number Of Articles Of The Law On Legal Aid
- Decree No. 70/2001/ND-CP Of October 3, 2001 Detailing The Implementation Of The Marriage And Family Law
- Decree no. 55/2009/ND-CP on sanctioning of administrative violations of gender equality.
- Decree No. 48/2009/ND-CP providing for measures to assure gender equality.
- Circular No. 191/2009/TT-BTC dated 1/10/2009 guiding the management and use of funds for gender equality activities and activities for the advancement of women. The circular was issued in time to meet the requirements of the Law on Gender Equality in ensuring financial resources for equality activities.
- Circular No 07/2011/TT-BTP dated 31/3/2011 issued by Minister of Justice providing guidance on gender equality in legal aid activities.
- Decision No. 2351/QĐ-TTg dated 24/12/2010 of the Government Prime Minister approving the National Strategy on Gender Equality (NSGE) period 2011-2020

viii) Indigenous Peoples and Minority group development policies

- Decision no.1956/2009/QD-TTg, dated November 17/2009, by the Prime Minister approving the Master Plan on vocational training for rural labours by 2020
- Decree no.82/2010/ND-CP of government, dated 20 July 2010 on teaching and learning of ethnic minority languages in schools.

- Resolution no.30a/2008/NQ-CP of government, dated 27 Dec. 2008 on support program for rapid and sustainable poverty reduction for 61 poorest districts.
- Decision no.74/2008/QD-TTg of the Prime Minister dated 9-June-2008 on support productive land and residential land for poor ethnic minority households in Mekong Delta area.
- Decree no.60/2008/NĐ-CP dated 9-May-2008 of the government on the functions, tasks, authorities and structure of the Committee for Ethnic Minorities Affair.
- Decision no.06/2007/QD-UBDT dated 12-January-2007 of the Committee for Ethnic Minorities Affair on the strategy of media for the program 135-phase 2.
- Decree no.70/2001/ND-CP: all documents registering family assets and land use rights must be in the names of both husband and wife.

ix) National policies and planning of reducing poverty

- Decision no.33/2007/QD-TTg of the Prime Minister dated 20-July-2007 on the policy of assistance to improve knowledge of laws as a program of 135, phase 2.
- Circular no.06 dated 20-September-2007 of the Committee for Ethnic Minorities Affair guidance on the assistance for services, improved livelihood of people, and technical assistance for improving the knowledge on the laws according the decision 112/2007/QD-TTg.
- Decision no.05/2007/QD-UBDT dated 06-September-2007 of the Committee for Ethnic Minorities Affair on its acceptance for three regions of ethnic minorities and mountainous areas based on development status.

x) The policies relate to the subproject implementation issuing by local authority

- Decision no.818/QD-Phu Cat People's Committee on dated 03/6/2014 regarding to appraisal of survey plan and project bidding to the construction works: repair, upgrade Thach Ban reservoirs
- Decision no.1290/QD-Phu Cat People's Committee on dated 07.15.2014 regarding to appraisal of the survey results of the consultants in the project of Thach Ban reservoir: repair, upgrade

xi) National standards

a) Water:

- QCVN 01:2009/BYT: National technique regulations on drinking-water quality
- QCVN 02:2009/BYT: National technique regulations on running water quality
- QCVN 08:2008/BTNMT: National technical regulation on surface water quality.
- QCVN 09:2008/BTNMT: National technical regulation on underground water quality
- QCVN 14:2008/BTNMT: National technical regulation on domestic wastewater
- QCVN 39:2011/BTNMT: National technical regulation on Water Quality for irrigated agriculture

b) Air quality:

- QCVN 05:2008/BTNMT: Air quality – Surrounding air quality criterions
- QCVN 06:2008/BTNMT: Air quality – maximum permitted concentration of noxious substances in the surrounding air.

- QCVN 07:2008/BTNMT: Air quality – Threatening of noxious substances in the air
- TCVN 6438:2001: Maximum permission limit of discarding dismissed gases.

c) Soil environment

- QCVN 03:2008/BTNMT: National technique regulations on permitted limit of hard metal in land
- QCVN 43:2012/BTNMT: National technical regulation on sediment quality

d) Solid waste management:

- TCVN 6696:2009: Solid waste – garbage cleaning. Common requirements for environmental protection
- QCVN 07:2009: National technique regulations on clarifying harmful waste.

e) *Vibration and Noise*:

- Technique regulations on vibration (replacing TCVN 6962:2001 – Vibration caused by construction work and factories – maximum permitted level in environment in public areas and residence zones)
- QCVN 26:2010/BTNMT – National technique regulations on noise (replacing TCVN 5948:1999 Acoustics – Noise caused by transportation moving when speeding up – permitted calculation level).

f) Health and labor safety:

Decision No. 3733/2002/QĐ-BYT of Ministry of Health dated October 10th 2002 about applying article 21 on labor health and relating safety criterions for microclimate, noise, vibration, chemicals – permitted level in work place

APPENDIX A4: ENVIRONMENTAL AND SOCIAL SCREENING RESULTS

Table 4.1: Environmental and social eligibility screening of the sub-project

Belong to Category A Screening Criteria

Screening Questions	*Yes/No*	*Remarks*
1. ***Does the subproject have the potential to cause significant adverse impacts to natural or critical natural habitats?***		
Leads to loss or degradation of sensitive Natural Habitats defined as: land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions	No	Acacia mangium, short term cultivation crops: ground nut, maize, cassava, paddy rice. It is not impact to local natural species or natural habitats
- Leads to loss or degradation of Critical natural habitat, i.e.: bio-diversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species.	No	Conservation areas, protect areas are not exist in the project areas. In upper stream of the reservoir. There is only secondary product forest, the main plant here are Acacia mangium. In the areas does not have critical natural habitats or vulnerable species following CITES
2. ***Does the subproject have the potential to cause significant adverse impacts to physical cultural resources?***		
Leads to loss or degradation of physical cultural resources, defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. They may be located in urban or rural settings, above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.	No	
- Potentially results in a contravention of national legislation, or national obligations under relevant international environmental treaties and agreements, including the UNESCO World Heritage Convention or affect sites with known and important tourism or scientific interest.	No	The project implementation following and accordance with National and international law, regulations
3. Does the subproject have the potential to cause significant adverse impacts on the lands and related natural resources used by ethnic minorities?		

Screening Questions	*Yes/No*	*Remarks*
Potentially result in impacts on lands or territories that are traditionally owned, or customarily used or occupied, and where access to natural resources is vital to the sustainability of cultures and livelihoods of minority peoples. Potentially impact the cultural and spiritual values attributed to such lands and resources or impact natural resources management and the long-term sustainability of the affected resources.	No	Indigenous/Ethnic minorities group is not impacted by the subproject implementation
4. Does the subproject have the potential to cause significant adverse effects to populations subject to physical displacement?		
Leads to physical displacement of populations dependent upon lands or use of specific use of resources that would be difficult to replace or restore? Otherwise lead to difficult issues in the ability of the subproject to restore livelihoods?	Yes	The sub-project impacts to 18 household of Thuan Hoa commune with 452m^2 effected areas. The total Permanent loss of land are 164,320m^2 including: 162,000m^2 agricultral land; 2,332m^2 residential land
5 . Does the subproject entail the construction of a large dam?		
Does the subproject require construction of a dam that is: • 15 meters or more in height • between 10 and 15 meters in height with special design complexities--for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials. • under 10 meters in height but expected to become large dams during the operation of the subproject?	Yes	- The crest of embankment is 40 m in height it belong to >25÷70m interval, type II - the total volume of Quao reservoir: 73 x 10^6m^3
Does the operation of the subproject rely on the performance of: • an existing dam or a dam under construction (DUC); • power stations or water supply systems that draw directly from a reservoir controlled by an existing dam or a DUC. diversion dams or hydraulic structures downstream from an existing dam or a	No	the operation of the subproject are not rely on the performance of these question

Screening Questions	*Yes/No*	*Remarks*
DUC, where failure of the upstream dam could cause extensive damage to or failure of the new World Bank-financed structure and irrigation or water supply projects that will depend on the storage and operation of an existing dam or a DUC for their supply of water and could not function if the dam failed		
6 . Does the subproject entail the procurement or use of pesticides?		
Do the formulations of the products fall in World Health Organization classes IA and IB, or are there formulations of products in Class II?,	No	The sub-project is not use the procurement or use of pesticides
7. Does the subproject have the potential to cause irreversible impacts or impacts that are not easily mitigated?		
Leads to loss of aquifer recharge areas, affects the quality of water storage and catchments responsible for potable water supply to major population centers.	No	Quao reservoir beyond ensuring water supply to irrigate 8120 ha at P = 75% ensure water supply for the population remaining project area
A lead to any impacts such that the duration of the impacts is relatively permanent, affects an extensive geographic area or impacts have a high intensity.	No	Impact during Summer crops cultivation period due to drainage water to construct embankment and outlet works
8. . Does the subproject have the potential to result in a broad diversity of significant adverse impacts?		
Multiple sites in different locations affected each of which could cause significant losses of habitat, resources, land or deterioration of the quality of resources.	Yes	- Land acquisition for material exploitation 6ha. During this activity, removing the top layer of land is required. It can affect to soil environment, site vegetation covers and air quality. - Land acquisition for camping site construction. Solid waste and wastewater are generating in this activities and impact to physical environmental. - Access road operation with 845,4 m in length, increasing noise, dust and traffic condition in the local will happen in this task - Howerver , it can be limited
Potential, significant adverse impacts likely to extend beyond the sites or facilities for the physical works.	Yes	- Land acquisition for temporally servicing road with arable land 31,875m^2. Potential impact to local road 4.25 km - Damage to the road from QL28 to dam

Screening Questions	*Yes/No*	*Remarks*
		- Rapid construction worker up to 50 workers. The construction activities could dramatically affect the existing infrastructure and community services. những phát sinh mâu thuẫn. Howerver , it can be limited
Transboundary impacts (other than minor alterations to an ongoing waterway activity).	No	The project implementing without inland water way transportation activities
Need for new access roads, tunnels, canals, power transmission corridors, pipelines, or borrow and disposal areas in currently undeveloped areas.	No	- The construction must dig peeling layer surface earth dams and mines extract the dam embankment material so it should have waste dump However, these effects can be reversed or mitigated
Interruption of migratory patterns of wildlife, animal herds or pastoralists, nomads or semi-nomads.	No	The project implementing areas don't have wildlife
***9.*Is the subproject unprecedented**		
Unprecedented at the national level?	No	Several similar projects have been executed
Unprecedented at the provincial level?	No	Several similar projects have been executed. This is the first t project funded by WB in the local
10. Is the project highly contentious and likely to attract the attention of NGOs or civil society nationally or internationally?		
Considered risky or likely to have highly controversial aspects.	No	The project is just focus on repair, upgrades the appurtenant structures, and therefore is not effect to local communities and their living environment.
Likely to lead to protests or people wanting to demonstrate or prevent its construction.	No	The consensus and agreement of local authority and community to approve the sub-project implementation.

Table 4.1: Potential Environmental and Social Impacts to be addressed

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
1.	Encroachment on historical/cultural areas	x					Do not encroachment on historical/cultural areas
2.	Encroachment on an ecosystem (e.g. natural habitat sensitive or protected area, national park, nature reserve etc....)	x					The proposed sub-project is not effect to natural habitats, vulnerable areas, national park or bio conservation areas.
3.	Disfiguration of landscape and increased waste generation.		x				- Site clearance and open access road will increase localized air quality and landscape - Construction activities: excavation, landfill, wasted earth and rock disposal, concrete work, etc., increasing noise, dust and construction debris, waste generation. -Rapid workers on construction site leading to increase solid waste and wastewater
4.	Removal of vegetation cover or cutting down of trees during clearance for construction		x				- Removal of vegetation cover for material exploitation - Land acquisition for camping site construction 4,400 m^2crop land
5.	Change of surface water quality or water flows (e.g. Increase water turbidity due to run- off, waste water from camp sites and erosion, and construction waste) or long-term.			x			- The construction must concentrate the number of workers of 200 people, the amount of waste generated is estimated around 80 kg of solid waste daily living; 12 m3 of waste water volume. Waste volume on if not collected, processed can carry pathogens and environmental pollutants and water area

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
							downstream of the lake. - Subproject using a variety of construction machinery such as excavators, bulldozers, auto transport, concrete mixers, generators ... the repair and maintenance of machinery, head of waste discharged from motor vehicles machines ... if not managed to increase the risk of surface water pollution, especially in the rainy season
6.	Increased dust level or add pollutants to the air during construction			x			- The activities include land transportation from mine materials, grading and compacting on the road. This time will generate a lot of dust and emissions from construction vehicles, mining positioned material, Dan Hoa village, Thuan Hoa commune, Ham Thuan Bac district, a major dam right arm around 3km. - Business earthworks, stone: by machine and automobile transportation to landfill increased dust, noise - Business Concrete mixers, auto shipping, vibrator ... may increase noise
7.	Increased noise and/or vibration			x			- Increased noise and vibration due to road construction management phase of excavating soil from compacting the first month and 1-2 year period concreting of road - Increased noise / vibration due to soil dam

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
							constructed mainly during the first years. However, due to noise pollution / vibration in this area have little effect on the lives of people due to its location away from residential areas. - Increased noise / vibration area mining pits land used by excavators during construction
8.	Resettlement of households? If yes, how many households?			x			452m^2/ 18 households at Thuan Hoa commune
9.	Use of resettlement site that is environmentally and/or culturally sensitive	x					don't have resettlement site
10.	Risk of disease dissemination from construction workers to the local peoples (and vice versa)?)			x			The majority and the most immediate adverse health impacts are expected to occur where construction workers (220 workers) and camp followers concentrate. These impacts would consist of communicable diseases (food- and water-borne, sexually transmitted diseases and HIV/AIDS)
11.	Potential for conflict between construction workers and local peoples (and vice versa)?			x			The peak concentration of about 220 worker, if no management measures and better coordination with local governments may conflict with people
12.	Use of explosive and hazardous chemicals			x			Use of explosive to contruct spillway 2
13.	Use of sites where, in the past, there were accidents incurred due to landmines or explosive materials	x					UOXs are not existing the local

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
	remaining from the war						
14.	Construction that could cause disturbance to the transportation, traffic routes, or waterway transport?.			x			The activities of construction phase are impact to transportation and local traffic at low level, due to: - The transporting routes material to construction site are short (3km) avia Thuan Hoa commune - The material transporting road from QL28 to construction site effected to local people.
15.	Construction that could cause any damage to the existing local roads, bridges or other rural infrastructures?			x			Active transport of construction materials is likely to cause damage to the road from QL28 construction works if the vehicle is overloaded
16.	Soil excavation during subproject's construction so as to cause soil erosion			x			The construction activities can cause soil erosion in the area of mining materials; earth dam construction site; Dump sites without technical leveling and compacting grass cover can also cause erosion to downstream

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
17.	Need to open new, temporary or permanent, access roads?			x			- Reconstruction of road management 1 and dam dam 3 with a total length of about 2.2 km. Refresh three management route downstream of the dam, the dam left and right main dam with a total length of about 4:25 km; - Upgrade the construction route TC1, TC2 road rehabilitation service to dam construction branch. - Upgrade the road TC3 and TC4 engines used in construction of the downstream at left abutment - Contruct a new TC7 construction road construction service Spillway no.2, this road will connect national road no.1 up to the top of spillway
18.	Separation or fragmentation of habitats of flora and fauna?	x					the subproject implementing do not separate or fragment of habitats of flora and fauna?
19.	Long-term impacts on air quality	X					The air quality is effecting during construction phase and is a temporally effect
20.	Accident risks for workers and community during construction phase			X			- Workers probable construction of fire accidents fuel sector; accidents during cutting iron, materials handling, process earthworks dam body; extraction process and transport to the place of construction land

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
							- Community residents can occur when a traffic accident at workside.
21.	Use of hazardous or toxic materials and generation of hazardous wastes.		x				Leaking oils and grease during Vehicle and equipment maintenance and storage
22.	Risks to safety and human health			x			- Impact to workers' hearing mechanisms. - Impact to workers' respiratory system - Impact to visual perception - Malaria, skill problem Diarrhea can be exposed due to camping site inadequacy treatment
23.	Interruption water supply to domestic users and to irrigation during appurtenant structures construction	x					Construction activities being implemented at the time the lowest water level and the water cut of construction, the investor has to take measures to guide the construction line from the Dai Ninh hydropower (Lam Dong) to water supply and producers should not affect
24.	Increase flooding level and reservoir sedimentation	x					The subproject implementing do not Increase flooding level and reservoir sedimentation because it do not change the elevation of spillway
Does the subproject entail land acquisition or restriction of access to resources?							
25.	Permanent or temporary loss of land or resources for any families, resettlement			x			Temporally land acquisition of 3.7ha arable land, for material pits exploitation, camping site, storage and disposal areas.
26.	Use land that is currently occupied or regularly used for	x					No

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
	productive purposes (e.g., gardening, farming, pasture, fishing locations, forests)						
27.	Displacement of individuals, families or businesses			x			There are 18 households to be relocated out of work protection corridors and compensate crop, which is mainly trees with about 100 cashew trees, 50 mango trees, 200 banana trees. In addition, about 102 m2 of housing, 10 galvanometer, and 93m2 kitchen
28.	Temporary or permanent loss of crops, fruit trees or household infrastructure			x			The total Permanent loss of land are 164,320m^2 including: 162,000m^2 agricultral land; 2,332m^2 residential land (Thuan Hoa commune)
29.	Involuntary restriction of access by people to legally designated parks and protected areas	x					Neither public parks nor conservation areas had been found
If the answer to any of the questions 25-29 is "Yes", please consult the ESMF; preparation of a Resettlement Plan (RP) is likely required.							
Are ethnic minority peoples present in the subproject area?							
30.	Ethnic minority groups are living within the boundaries of, or nearby, the subproject.			x			8 household at Thuan Hoa commune, Ham Thuan Bac district
31.	Members of these ethnic minority groups in the area potentially could benefit or be harmed from the project.	x					No
If the answer to questions 30 or 31 is "Yes", please consult the ESMF; and preparation of an Ethnic Minority Development Plan (EMDP is likely required.							
Does the subproject entail construction of or depend upon a dam?							
32.	Involve the construction of a large dam?		x				The crest of embankment is 40 m in height it belong to >25÷70m interval, type

No	*Does the subproject entail these environmental impacts?*	*No*	*Low*	*Medium*	*High*	*Not known*	*Remarks*
							II
33.	Depend on water supplied from an existing dam or weir or a dam under construction?				x		Depend on water supplied from Dan Sach dam
If the answer to question 32 or 33 is "Yes", please consult the ESMF; a Dam Safety Report (DSR) will likely be required.							

APPENDIX A5 - ANALYSIS RESULTS OF ENVIRONMENT QUALITY

5.1. Describe the sampling location

Table 5.1: The monitoring location of surface water

No	Symbol	Location	Coordinates	Description
I/	**Water in lake**			
1	NM 1	Water on auxility spillway no.1	N 11°09'54.4" E 108°08'22.9"	Sunny, no flow, green water
2	NM 2	Water on auxility spillway no.3	N 11°09'47.1" E 108°07'50.9"	Sunny, no flow, green water
3	NM 3	Water on the right abutment	11°10'00.3"N 108°08'33.3"E	Sunny, green water
4	NM4	Water on the left abutment	N 11°10'14.5" E 108°08'36.7"	Sunny, green water
5	NM5	Water on the embankment dam	N 11°10'04.5" E 108°08'44.9"	Sunny, green water,
6	NM 6	Water on auxility spillway no.2	N 11°10'18.1" E 108°08'37.4"	Sunny, green water,
7	NM 7	Water on the auxility dam	N 11°09'39.8" E 108°08'41.1"	Sunny, blue water, no flow, no dirt, no trash
II/	**Water on canals**			
1	NM8	Water on canal which located in the auxility dam no.1, Ham Tri commune	N 11°09'45.9" E 108°08'25.8"	Sunny, slight flow, freshwater
2	NM 9	The downstream of Quao reservoir	N 11°09'47,56" E108°08'33,23"	Sunny, slight flow, no garbage, no dirt
3	NM 11	Water on Thuan Hoa canal at Thuan Hoa commune	N 11°09'59.9" E 108°09'03.5"	Sunny, blue water, medium flows, no garbage, no dirt
4	NM 12	Quao reservoir, Trang bridge - Ham Phu commune- Ham Thuan Bac district	N 11°07'6,66" E108°06'27.33"	Sunny, slight flow, no trash, green water
5	NM 17	Quao irrigation canal at Ham Chinh commune	N 11°02'57.40" E 108°06'06.56"	Sunny, low flow, blue water, no garbage
6	NM 23	Cha Giang canal, An Hiep village, Ham Thang commune	N 10°58'33.8" E 108°07'08.6"	Sunny, slight flow, no trash, blue water
7	NM 30	N11canal at Thuan Minh commune	N 11°05'46.4" E 108°04'54.6"	Sunny, medium flow, green water
8	NM 31	N13 canal at Thuan Minh commune	N 11°04'52.2" E 108°04'53.2"	Sunny, medium flow, green water
9	NM 32	N9 canal, Ham Phu commune	N 11°06'35.9" E 108°05'26.3"	Sunny, medium flow, green water
10	NM 33	Canal No.3, Ham Phu commune	N 11°07'12.5" E 108°05'53.0"	Sunny, medium flow, green water, no garbage

No	Symbol	Location	Coordinates	Description
11	NM 35	water on bridge no.8 at Ham Chinh commune	N 11°01'33.0" E 108°04'43.3"	Sunny, medium flow, green water, no garbage
III/	**Water on river**			
1	NM 10	Water on Cai river at the bottom of embankment dam, Thuan Hoa commune	N 11°09'58.4" E 108°08'49.9"	Sunny, blue water, medium flow, no garbage, no dirt
2	NM 13	Water on Cai river at the Quao bridge, Thuan Hoa commune	N 11°09'43.57" E108°08'50.9"	Sunny, slight flow, not garbage
3	NM 14	Water on Cai river at Sen bridge, Ma Lam town	N 11°03'21,66" E108°07'36,82"	unny, medium flow, green water, no trash
4	NM 15	Water on Cai river at Phu Hai commune	N 10°56'53.078" E108°08'33.15"	Sunny, , the flow of the ocean, blue water, less trash
5	NM 16	Water on Cai river at Kim Long dam, Ham Tri commune	N 11°05'44.15" E 108°08'01.39'	Sunny, low flow, green water, no trash
6	NM 18	Water on Cai river at Thay Nghe dam, Ham Chinh commune	N 11°00'16.12' E 108°06'56.29"	Sunny, medium flow, green water, no trash
7	NM 19	Water on Cai river at Tam Hung bridge dam, Ham Chinh commune	N 11°01'55.58" E108°08'43.24''	Sunny, low flow, green water,
8	NM 20	Water on Cai river at Ham Tri commune	N 11°06'47.26" E 108°08'00.63"	Sunny, low flow, no dirt, blue water
9	NM 21	Water on Cai river at Ham Thang commune	N 10°58'21.7" E 108°08'29.8"	Sunny, low flow, blue water, less trash, grass riverside
10	NM 22	Water on Cai river at Cha Giang dam, Ham Thang commune	N 10°58'49.3" E 108°07'13.7"	Sunny, light flow, blue water,
11	NM 24	Nước sông Cái tại Đập Ô Xuyên, TT Ma Lâm Water on Cai river at O Xuyen, Ma Lam town	N 11°04'05.5" E 108°07'36.7"	Sunny, low flow, green water, grass riverside
12	NM 25	Nước sông sau đập Vai Ré, TT Ma lâm Water on river after Vai Re dam, Ma Lam town	N 11°04'55.0" E 108°07'38.7"	Sunny, medium flow, green water, grass riverside
13	NM 26	Water on Cai river at Cau Quan wharf, Phu Hai commune	N 10°56'26.9" E 108°08'23.2"	Sunny, medium flow
14	NM 27	Cai estuarie, Phu Hai commune	N 10°56'05.5" E 108°08'21.9"	Many boats moored, litter, light flow, tidal influences
15	NM 29	Water on Can no.2 river, Ham Duc commune	N 11°01'59.7" E 108°09'32.9"	Sunny, low flow, with coastal vegetation
16	NM 34	Sieng Giang dam, Ham Duc commune	N 11°01'19.6" E 108°09'28.4"	Sunny, low flow, blue water, no garbage

Table 5.2: The monitoring location of ground water

No	Symbol	Location	Coordinates	Description
Water in wells				
1	NN 2	The located water in wells at Mr. Son household, Dan Hoa village, Thuan Hoa commune	N 11°11'10.8" E 108°09'33.4"	Freshwater, slight sulfur smell
2	NN 3	The located water in wells at Mrs. Ngoc household, Lam Giang village, Ham Tri commune	N 11°07'08.1" E 108°07'55.7"	Freshwater , odorless
3	NN 8	The located water in wells at Mrs. Doi household, Ham Chinh commune	N 11°03'21.9" E 108°07'36.5"	Freshwater , odorless
4	NN 10	The located water in wells at Mr. Lam household, An Hiep village, Ham Chinh commune	N 10°58'07.2" E 108°06'54.5"	Freshwater , odorless
5	NN 11	The located water in wells at Mr.Ly household, Ma Lam town	N 11°04'57.5" E 108°07'50.5"	Freshwater , odorless
6	NN 12	The located water in wells at Mr.Chan household, Ma Lam town	N 11°03'55.2" E 108°07'40.4"	Freshwater , odorless
7	NN 13	The located water in wells at Mr.Binh household, Phu Long town	N 10°58'58.9" E 108°09'04.8"	Freshwater , odorless
8	NN 14	The located water in wells at Mr.Minh household, Phu Long town	N 10°58'09.1" E 108°08'41.9"	Freshwater , odorless
9	NN 16	The located water in wells at Mr. Sang household, Xuan Phong village, Ham Hiep commune	N 10°56'41.9" E 108°05'10.7"	Freshwater , odorless
10	NN 17	The located water in wells at Mr. Thuan household, Hoa Thanh village, Ham Duc commune	N 11°02'06.4" E 108°09'57.0"	Freshwater , odorless
11	NN 18	The located water in wells at Mr. Khang household, Ham Duc commune	N 11°02'06.4" E 108°09'57.0"	Freshwater , odorless
12	NN 19	The located water in wells at Mrs. Sau household, Long Hiep village, Hong Son commune	N 11°03'43.7" E 108°11'16.6"	Freshwater , odorless
13	NN 20	The located water in wells at Mr. Hung household, Long Giang village, Hong Son commune	N 11°04'47.6" E 108°12'00.4"	Freshwater , odorless
14	NN 21	The located water in wells at Mr. Chuong household, Hong Lien commune	N 11°07'35.2" E 108°12'22.9"	Freshwater , odorless
15	NN 24	The located water in wells at Mr. Qúy household, Ham Phu commune	N 11°05'48.0" E 108°07'49.1"	Freshwater , odorless
16	NN 28	The located water in wells at Mr. Thanh household, Ham Lien commune	N 10°58'26.7" E 108°06'29.6"	Freshwater , odorless
Water in drilling wells				
17	NN 1	The located water in drilling wells at Mr. Minh household, Thuan Hoa commune	N 11o09;41.31'' E	Freshwater, slight sulfur smell.

No	Symbol	Location	Coordinates	Description
			108o11’47.05’’	
18	NN 4	The located water in drilling wells at Mr. Tuan household, Phu Thai village, Ham Tri commune	N 11o07’55.13’’ E 108o06’51.94’’	Freshwater, odorless, with alum
19	NN 5	The located water in drilling wells at Mr. Hau household, Gia Dam village, Ham Tri commune	N 11°08'18.7" E 108°08'57.2"	Freshwater , odorless
20	NN 6	The located water in drilling wells at Mr. Van household, Ham Chinh commune	N 11^{o}00’33.34’’ E 108^{o}07’52.15’’	Freshwater , odorless
21	NN 7	The located water in drilling wells at Mr. Tung household, Ham Chinh commune	N 11°01'29.7" E 108°06'38.2"	Freshwater , odorless
22	NN 9	The located water in drilling wells at Mr. Chau household, Ung Chiem village, Ham Thang commune	N 10^{o}59’03.53’’ E 108^{o}07’53.45’’	Freshwater , odorless
23	NN 15	The located water in drilling wells at Mr. Minh household, Phu Xuan village, Ham Hiep commune	N 10°57'13.7" E 108°03'51.6"	Freshwater , odorless
24	NN 22	The located water in drilling wells at Mr. Khang household, Hong Liem commune	N 11°09'34.5" E 108°11'45.5"	Freshwater , odorless
25	NN 23	The located water in drilling wells at Mr. Binh household, Ham Phu commune	N 11°05'59.9" E 108°06'17.0"	Freshwater , odorless
26	NN 25	The located water in drilling wells at Mrs. Khuyen, Thuan Minh commune	N 11°04'25.1" E 108°05'23.3"	Freshwater , odorless
27	NN 26	The located water in drilling wells at Mrs. Hieu household, Thaun Minh commune	N 11°03'50.5" E 108°06'31.7"	Freshwater , odorless
28	NN 27	The located water in drilling wells at Mr. Can household, Tan Binh village, Ham Lien commune	N 10°58'39.1" E 108°04'39.8"	Freshwater , odorless

Table 5.3: The monitoring location of air quality

No	Symbol	Location	Coordinates	Description
1	KK1	crest of dam, Ham Tri commune	N 11^{o}10'12.9" E108^{o}08'36.7"	Sunny, low wind, no dust
2	KK2	Crest of right abutment	N 11°10'28.3" E 108°08'29.2"	Sunny, low wind, no dust
3	KK3	Crest of auxility dam no.1, Ham Tri commune	N 11^{o}09’53.8’’ E 108^{o}08'24.0’	Sunny, low wind, no dust

4	KK4	Crest of auxility dam no.3, Ham Tri commune	N 11°09’48.1’’ E 108°07’54.5’	Sunny, low wind, no dust
5	KK5	National road 28, Ham Tri commune	N 11°09'42.1" E 108° 08'53.9"	Sunny, low wind
6	KK6	The acess road from national no.2 to auxility dam no.1	N 11°09'46.8" E 108°08’27.7’’	Sunny, low wind, no dust
7	KK7	The acess road from national no.1 to auxility dam no.3	N 11°09'45.5" E 108°08'13.1"	Sunny, low wind, no dust
8	KK8	The acess road no.5	N 11°10'12.9" E 108°09'01.9"	Sunny, low wind, no dust
9	KK9	The acess road at left abutment	N 11°10'38.9" E 108°08'48.0"	Sunny, low wind, no dust
10	KK10	The material transpoting road	N 11°10'00.8" E 108°09'15.7"	Sunny, low wind, no dust
11	KK11	The road, Ma Lam town	N 11°03'03.2" E 108°06'19.1"	Sunny, low wind, no dust

Table 5.4: The monitoring location of soil sample

No	Symbol	Location	Coordinates	Description
Soil in contruction areas				
1	Đ1	Plan of the expected contruction area no.1	11°10'17.3"N 108°08'49.6"E	
2	Đ2	Disposal of contruction areas	11°09'44.6"N 108°08'23.8"E	
3	Đ3	Plan of the expected contruction area no.2, Ham Tri commune	11°09'44.6"N 108°08'20.4"E	
4	Đ4	Disposal of embankment dam contruction areas , Thuan Hoa commune	11°10'36.2"N 108°08'52.9"E	
5	Đ5	Disposal at Thuan Hoa commune	11°09'52.8"N 108°09'23.7"E	
Agriculture land				
6	Đ6	the paddy areas at Thuan Hoa commune	N 11°10'15.36" E108°08'48.99"	Dry fields, paddy land
7	Đ7	the paddy land nearby disposal	11°09'55.4"N 108°09'23.2"E	Wet fields, paddy land
8	Đ8	the paddy lan, Ma Lam town	N 11°04'30,96" E108°07'47,34"	Wet fields, paddy land, no grass
9	Đ9	Dragon fruit land, Ham Chinh commune	N 11°02'57.5" E108°06'04.1"	Wet fields, dragon fruit land
10	Đ10	Dragon fruit land, Ham Chinh commune	N 11°02'29,21" E108°05'21.63"	Dry fields, no grass
11	Đ11	The paddy	N 10°59'24,75" E108°08'06,95"	Dry fields, paddy land

No	Symbol	Location	Coordinates	Description
12	Đ12	Dragon fruit land, Ham Chinh commune nearby national road no.28	N 10°59'1,16" E108°06'52,26"	Dry fields, no grass
13	Đ13	Dragon fruit land, An Hiep village, Ham Thang commune	N 10°58'21,43'' E 108°07'15,79"	Dragon fruit land, Dry fields, no grass
14	Đ14	The paddy land, Ham Tri commune	N 11°07'14.30' E108°07'46.78"	Wet fields, paddy land
15	Đ15	Dragon fruit land, Tan Binh 1 village, Ham Liem commune	N 10°58'32.7" E 108°04'39.5"	Dragon fruit land, wet fields, no grass
16	Đ16	Dragon fruit land, Tan Dien 2 village, Ham Liem commune	N 10°58'25.9" E 108°06'39.2"	Dragon fruit land, wet fields,
17	Đ17	The paddy land, Ham Phu commune	N 11°05'42.3" E 108°07'56.0"	Wet fields, paddy land
18	Đ18	Dragon fruit land nearby N09 canal	N 11°06'35.9" E 108°05'26.3"	Dragon fruit land, wet fields, no grass
19	Đ19	Dragon fruit land nearby national road 1A, Ham Thang commune	N 10°58'18.1" E 108°08'28.8"	Dragon fruit land, dry fields
20	Đ20	Dragon fruit land nearby N11 canal, Thaun Minh commune	N 11°05'46.4" E 108°04'54.6"	Dragon fruit land, wet fields,no grass
21	Đ21	Dragon fruit land, An Phu village, Thuan Minh commune	N 11°04'28.0" E 108°06'00.7"	Dragon fruit land, wet fields,no grass
22	Đ22	The paddy land, Ma Lam town	N 11°04'01.9" E 108°07'59.6"	the paddy land
23	Đ23	Dragon fruit land, Phu Thinh 1village, Phu Long town	N 10°58'06.3" E 108°08'38.4"	Dragon fruit land, wet fields,no grass
24	Đ24	Dragon fruit land, Phu Binh 1village, Phu Long town	N 10°58'53.2" E 108°09'04.9"	Dragon fruit land, wet fields,no grass
25	Đ25	Dragon fruit land,Ham Hiep commune	N 10°57'58.3" E 108°04'10.9"	Dragon fruit land, wet fields,no grass
26	Đ26	Dragon fruit land,Ham Hiep commune	N 10°58'25.2" E 108°03'20.5"	Dragon fruit land, wet fields,no grass
27	Đ27	Dragon fruit land, Hoa Thanh village, Ham Duc commune	N 11°02'23.1" E 108°10'02.1"	Dragon fruit land, dry fields,no grass
28	Đ28	The paddy land, Hoa Dien vilage, Ham Duc commune	N 11°02'40.8" E 108°09'50.5"	Sunny, paddy land

Table 5.5: The monitoring location of sludge

No	Symbol	Location	Coordinates	Description
1	BĐ 1	Thu Tan canal, Ham Thang commune	N 10°58'50.9" E 108°07'14.4"	Black mud, smelling, less spam
2	BĐ 2	Cai canal, Ma Lam town	N 11°03'36.4" E 108°08'40.5"	Black-brown mud, smelling, not garbage
3	BĐ 3	Ngua canal, Ham Tri commune	N 11°08'00.0" E 108°07'28.2"	Black-brown mud, smelling, not garbage
4	BĐ 4	Ta Quang stream, Ham tri commune	N 11°08'00.0" E 108°07'28.2"	Black-brown mud, smelling, not garbage
5	BĐ 5	Cut canal, Ham Chinh commune	N 11°01'54.2" E 108°08'45.0"	Black mud, smelling, not garbage
6	BĐ 6	So Tau canal, Ham Chinh commune	N 11°00'52.3" E 108°07'34.8"	Black mud, smelling, not garbage
7	BĐ 7	Suoi Vang canal, Ham Thang commune	N 10°57'29.9" E 108°06'46.8"	Black mud, smelling, not garbage
8	BĐ 8	Cạn 2 canal, Ham Duc commune	N 11°01'59.7" E 108°09'32.9"	Black-brown mud
9	BĐ 9	N9 canal, Ham Phu commune	N 11°06'35.9" E 108°05'26.3"	Black-brown mud, smelling,
10	BĐ 10	N11 canal, Thuan Minh cummune	N 11°05'46.4" E 108°04'54.6"	Black-brown mud, smelling,

APPENDIX A6-ANALYSIS RESULTS OF ENVIRONMENTALSAMPLES

Table A6-1: Analysis results of surface water

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội
Tel: 844-8.539.127
Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU HÓA LÝ NƯỚC MẶT

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc, tỉnh Bình Thuận

Tháng 2 năm 2015

Kí hiệu mẫu	Nhiệt độ °C	Độ đục NTU	pH -	DO mg/l	EC µs/cm	SS mg/l	TDS mg/l	COD mg/l	BOD_5 mg/l	NO_2^- mg/l	NO_3^- mg/l	NH_4^+ mg/l	PO_4^{3-} mg/l	SO_4^{2-} mg/l	CT mg/l	$Fe_{tổng}$ mg/l
NM1	29,8	24,86	7,5	6,02	439	20,36	49,98	19,20	5,76	0,42	0,04	0,39	<0,01	7,62	18,43	0,06
NM2	30,9	52,76	7,9	6,29	459	22,14	171,93	17,20	8,88	0,02	0,04	0,81	0,01	6,88	47,47	0,10
NM3	30,2	48,02	7,3	5,80	465	34,52	239,90	14,80	6,56	0,40	0,74	0,28	0,01	24,16	15,60	0,34
NM4	30,2	32,34	8,1	4,11	471	12,04	177,93	24,80	12,92	0,02	1,18	0,38	0,02	27,30	12,05	0,64
NM5	30,4	38,55	8,0	5,26	534	46,22	86,97	19,60	8,84	< 0,01	0,16	0,11	0,01	17,56	14,42	0,34
NM6	30,3	48,66	7,3	6,30	497	44,08	354,86	19,60	9,20	0,03	0,08	0,93	0,01	11,40	12,05	1,18
NM7	30,6	18,54	8,0	6,40	543	24,50	179,93	8,00	3,04	0,01	0,04	0,28	0,01	8,02	87,92	0,36
NM8	30,8	22,18	7,6	4,76	570	32,64	44,98	12,40	6,96	0,12	0,02	0,36	0,01	17,54	99,26	0,70
NM9	30,1	31,43	7,5	4,90	647	42,08	69,97	24,00	9,60	0,40	0,12	3,81	0,13	3,12	113,44	0,74
NM10	30,3	25,33	8,6	5,52	610	42,60	351,86	24,50	9,40	0,01	0,08	2,69	0,36	5,70	151,73	0,30
NM11	30,3	16,72	7,9	6,64	616	34,58	361,86	17,20	6,88	< 0,01	0,12	5,04	0,02	3,16	148,89	0,02
NM12	30,2	29,54	8,5	4,82	628	45,04	269,89	22,00	7,80	< 0,01	0,14	1,40	0,01	4,98	17,02	0,04
NM13	30,2	64,71	8,4	5,27	706	52,12	99,96	19,60	7,09	< 0,01	0,18	0,75	0,02	5,92	17,02	0,20
NM14	30,4	28,31	8,0	5,91	710	20,36	254,90	14,32	7,28	< 0,01	0,14	0,54	0,02	15,48	18,43	0,02
NM15	30,3	36,34	8,1	6,13	814	20,24	151,94	16,24	6,40	< 0,01	0,10	3,40	0,01	25,20	110,68	0,08
NM16	30,9	37,19	7,3	4,24	553	32,50	124,95	16,80	6,00	0,02	0,08	2,24	0,01	20,02	107,04	0,06
NM17	30,2	92,40	8,4	4,80	656	86,60	47,98	19,12	7,65	0,78	0,34	1,57	0,01	17,92	31,75	0,02
NM18	30,5	32,45	7,5	4,68	853	22,06	12,00	11,04	4,60	0,04	0,12	0,78	0,02	17,92	49,21	0,14
NM19	30,2	29,52	7,5	4,32	1020	15,28	309,88	12,80	5,40	0,02	0,16	0,28	0,08	9,94	40,85	0,06
NM20	29,7	15,46	8,3	4,20	566	24,02	89,96	17,20	6,88	< 0,01	1,00	0,56	0,02	20,38	45,40	0,04
NM21	30,1	38,55	7,3	4,72	469	41,16	74,97	39,2	16,12	0,42	0,58	0,50	0,01	13,70	41,22	0,04
NM22	30,6	48,66	7,1	4,92	450	42,08	369,85	35,2	14,25	0,02	0,04	0,62	0,02	23,68	39,58	0,06

NM23	30,1	18,54	7,1	5,12	635	30,56	314,87	24,5	9,12	0,02	0,12	0,78	0,01	12,18	31,96	0,32
NM24	30,3	22,18	7,1	4,48	518	30,44	89,96	26,4	11,28	0,01	0,18	0,81	0,02	19,68	23,92	1,08
NM25	30,8	31,43	7,6	5,40	435	35,22	126,95	17,6	6,32	0,24	0,18	2,28	0,04	10,94	38,68	0,16
NM26	30,2	25,33	7,7	4,76	549	40,52	59,98	20,8	8,57	0,36	0,04	1,85	0,02	13,12	55,98	0,50
NM27	30,3	16,72	7,4	4,32	592	30,62	62,97	19,2	8,12	0,04	1,28	0,36	0,01	4,96	9,22	0,16
NM28	30,4	29,54	7,4	5,12	598	33,20	79,97	16,2	6,32	0,03	1,84	1,16	<0,01	17,60	17,80	0,84
NM29	30,3	64,71	7,4	6,02	1236	46,64	80,36	24,4	10,60	0,02	0,24	1,79	0,02	2,68	10,64	0,06
NM30	30,5	28,31	7,1	4,32	1328	34,28	119,95	26,8	12,52	0,01	0,24	2,63	0,01	11,50	35,45	0,02
NM31	30,8	36,34	7,0	5,24	745	29,26	124,95	14,0	5,04	0,08	0,24	0,62	0,01	21,70	40,85	0,10
NM32	30,4	37,19	7,3	5,01	725	32,18	39,98	29,6	12,76	0,14	0,42	1,12	0,01	28,88	24,82	0,22
NM33	30,3	20,33	8,4	5,13	605	28,40	69,97	25,2	10,72	0,04	0,74	1,57	0,22	31,60	54,59	0,24
NM34	30,6	44,35	7,5	4,46	569	30,72	74,97	36,0	15,40	0,01	0,06	0,47	0,02	50,88	53,88	0,24
NM35	30,2	86,86	7,30	5,24	568	48,36	89,96	19,60	7,04	0,02	0,62	0,44	0,54	11,50	12,76	0,04

Hà Nội, Ngày 15 tháng 05 năm 2015

T/M Nhóm phân tích

Lê Văn Cư

P. Trưởng phòng Thí nghiệm Tổng hợp

Vũ Quế Chính

Viện Nước, Tưới tiêu và Môi trường

VIỆN NƯỚC TƯỚI TIÊU VÀ MÔI TRƯỜNG

PHÓ VIỆN TRƯỞNG

Vũ Thị Thanh Hường

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội Tel: 844-8.539.127 Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU VI SINH VÀ KIM LOẠI NẶNG NƯỚC MẶT

* *Tiểu dự án:* Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc tỉnh Bình Thuận

Tháng 2 năm 2015

Kí hiệu mẫu	As	Pb	Cd	Coliform	Cl.Perfringen
	mg/l	mg/l	mg/l	MPN/100ml	KL/10ml
NM1	0,00027	0,00042	0,00026	780	15
NM2	0,00114	0,00070	0,00034	2400	10
NM3	0,00027	0,00017	0,00082	750	60
NM4	0,00066	0,00081	0,00074	1700	40
NM5	0,00064	0,00022	0,00026	6300	200
NM6	0,00051	0,00092	0,00109	1600	40
NM7	0,00089	0,00032	0,00140	1300	50
NM8	0,00024	0,00098	0,00019	2000	10
NM9	0,00056	0,00083	0,00192	400	0
NM10	0,00024	0,00085	0,00120	1700	11
NM11	0,00120	0,00079	0,00014	930	8
NM12	0,00167	0,00014	0,00016	130	10
NM13	0,00021	0,00072	0,00018	1100	54
NM14	0,00026	0,00021	0,00010	2000	18
NM15	0,00028	0,00047	0,00012	420	43
NM16	0,00061	0,00038	0,00010	140	0
NM17	0,00031	0,00036	0,00009	120	28
NM18	0,00094	0,00044	0,00012	230	16
NM19	0,00026	0,00036	0,00014	400	10
NM20	0,00182	0,00040	0,00014	1300	110
NM21	0,00131	0,00071	0,00017	230	11
NM22	0,00134	0,00064	0,00014	170	0
NM23	0,00134	0,00085	0,00008	340	0
NM24	0,00109	0,00075	0,00019	1100	68
NM25	0,00097	0,00062	0,00023	190	0
NM26	0,00085	0,00092	0,00018	1600	230
NM27	0,00094	0,00120	0,00029	13000	34
NM28	0,00058	0,00098	0,00092	450	0
NM29	0,00016	0,00166	0,00020	630	57
NM30	0,00050	0,00102	0,00014	4900	8
NM31	0,00219	0,00203	0,00016	1300	11
NM32	0,00182	0,00096	0,00013	780	10
NM33	0,00029	0,00163	0,00010	460	23
NM34	0,00007	0,00110	0,00026	7000	540
NM35	0,00109	0,00075	0,00011	2600	210

Hà Nội, Ngày 8 tháng 5 năm 2015

T/M nhóm phân tích

Lê Văn Cư

P. Trưởng phòng

Vũ Quốc Chính

Viện Nước, Tưới tiêu và Môi trường

VIỆN NƯỚC TƯỚI TIÊU VÀ MÔI TRƯỜNG

VIỆN TRƯỞNG

Vũ Thị Thanh Hường

Table A6-2: Analysis results of ground water

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội Tel: 844-8.539.127 Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU HÓA LÝ NƯỚC NGẦM

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc, tỉnh Bình Thuận

Tháng 2 năm 2015

TT	Kí hiệu mẫu	Nhiệt độ oC	Độ đục NTU	pH -	DO mg/l	EC µs/cm³	SS mg/l	TDS mg/l	COD mg/l	NO_2^- mg/l	NO_3^- mg/l	NH_4^+ mg/l	PO_4^{3-} mg/l	SO_4^{2-} mg/l	CT mg/l	$Fe_{tổng}$ mg/l
1	NN1	30,4	0	7,12	5,92	221	KPH	66,02	3,04	<0,01	0,04	0,06	0,01	6,64	17,73	0,04
2	NN2	30,6	0	6,84	6,88	269	KPH	52,06	3,2	<0,01	0,54	<0,01	0,01	8,48	37,58	0,04
3	NN3	30,9	0,68	7,79	5,536	224	4,55	57,02	3,68	<0,01	0,96	<0,01	0,72	16,43	48,92	0,02
4	NN4	30,3	0	7,84	3,2	301	KPH	71,06	4	0,03	0,02	<0,01	0,16	20,5	74,45	0,07
5	NN5	30,5	0	7,36	4	196	KPH	90,13	4	<0,01	<0,01	0,06	0,01	19,3	7,09	0,06
6	NN6	30,7	0	6,97	4,8	204	KPH	65,32	5,6	0,02	6,6	<0,01	0,01	34,63	15,6	0,02
7	NN7	30,8	0	7,26	7,2	295	KPH	43,75	2,4	<0,01	0,32	0,06	0,04	26,82	14,89	0,05
8	NN8	30,4	0	6,87	6,4	251	KPH	26,06	2,72	0,01	0,12	<0,01	0,05	13,09	10,64	0,05
9	NN9	30,7	0	6,98	7,04	160,4	KPH	44,02	2,4	<0,01	0,44	<0,01	0,08	20,67	10,64	0,05
10	NN10	30,8	0	7,16	5,92	309	KPH	49,15	3,68	0,01	2,78	<0,01	0,03	29,08	38,29	0,11
11	NN11	30,3	0	7,24	6,24	290	KPH	78,03	4	<0,01	1,04	<0,01	0,03	33,18	17,02	0,05
12	NN12	30,7	0	7,27	5,76	144,3	KPH	68,04	4,8	0,01	3,36	<0,01	0,02	31,93	10,97	0,05
13	NN13	30,5	0	6,96	4,64	353	KPH	67,02	4	0,01	6,56	0,11	0,76	16,67	25,18	0,11
14	NN14	30,2	0	7,24	5,92	191,7	KPH	132,17	2,4	0,01	3,04	0,22	0,01	37,5	14,54	0,06
15	NN15	30,8	0	7,08	7,264	285	KPH	56,37	3,2	0,01	1,1	<0,01	0,01	44,94	24,89	0,02
16	NN16	30,2	0	7,32	4	290	3,73	45,11	2,72	0,01	1,08	<0,01	<0,01	22,9	39,48	0,04
17	NN17	30,8	0	7,92	6,304	293	KPH	38,82	4	0,01	3,18	<0,01	<0,01	29,49	46,91	0,02
18	NN18	30,5	0	7,68	5,44	277	KPH	69,12	4,8	0,01	0,08	<0,01	<0,01	21,62	27,65	0,08
19	NN19	30,3	0	7,88	5,6	280	KPH	48,36	0,8	0,01	0,04	<0,01	<0,01	52,84	16,94	0,04
20	NN20	30,9	0	7,74	5,28	252	KPH	46,03	4	0,01	0,06	0,06	0,01	50,11	36,76	0,05
21	NN21	30,2	0	7,18	5,12	259	KPH	89,32	3,8	0,06	0,14	<0,01	<0,01	18,93	13,9	0,18

22	NN22	30,7	0	7,36	5,76	120	KPH	57,9	2,8	<0,01	0,04	<0,01	0,21	29,39	12,75	0,08
23	NN23	30,7	0	7,35	6,24	210	KPH	39,56	1,6	<0,01	0,08	0,28	0,34	21,34	8,35	0,03
24	NN24	30,5	0	7,86	6,37	110	KPH	67,21	4,4	0,01	0,08	<0,01	<0,01	20,33	14,4	0,14
25	NN25	30,6	0	7,82	6,43	186	KPH	84,03	3,42	0,01	0,06	<0,01	<0,01	43,84	23,6	0,04
26	NN26	30,3	0	7,79	5,76	208	KPH	69,15	3,6	0,01	0,08	<0,01	<0,01	30,7	42,16	0,06
27	NN27	30,4	0	7,52	5,12	202	KPH	44,43	2,92	0,01	0,12	<0,01	0,01	26,83	22,41	0,12
28	NN28	30,4	0	7,86	6,24	190	KPH	118,34	2,6	0,01	0,14	<0,01	<0,01	36,29	34,05	0,14

Hà Nội, Ngày 15 tháng 03 năm 2015

T/M Nhóm phân tích

Lê Văn Cư

P. Trưởng phòng Thí nghiệm Tổng hợp

Vũ Quốc Chính

Viện Nước, Tưới tiêu và Môi trường

VIỆN NƯỚC TƯỚI TIÊU VÀ MÔI TRƯỜNG

PHÓ VIỆN TRƯỞNG

Vũ Thị Thanh Hiang

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội Tel: 844-8.539.127 Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU VI SINH VÀ KIM LOẠI NẶNG NƯỚC NGẦM

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc tỉnh Bình Thuận

Tháng 2 năm 2015

TT	Kí hiệu mẫu	As	Pb	Cd	Coliform	Cl.Perfringen
		mg/l	mg/l	mg/l	MPN/100ml	KL/10ml
1	NN1	0,00045	0,00033	0,00043	0	0
2	NN2	0,00022	0,00024	0,00055	0	0
3	NN3	0,00051	0,00016	0,00025	35	0
4	NN4	0,00075	0,00036	0,00023	0	0
5	NN5	0,00118	0,0004	0,00032	0	0
6	NN6	0,00068	0,00032	0,00026	0	0
7	NN7	0,00114	0,00034	0,00034	0	0
8	NN8	0,00024	0,00011	0,00038	0	0
9	NN9	0,00025	0,00005	0,00028	0	0
10	NN10	0,00026	0,00009	0,00092	0	0
11	NN11	0,00033	0,0001	0,00065	0	0
12	NN12	0,00038	0,00012	0,00072	0	0
13	NN13	0,00038	0,00036	0,00064	0	0
14	NN14	0,00042	0,00028	0,00045	0	0
15	NN15	0,0005	0,00013	0,00016	0	0
16	NN16	0,00025	0,00091	0,00055	0	0
17	NN17	0,00028	0,00082	0,00017	3	0
18	NN18	0,00151	0,00092	0,00043	18	0
19	NN19	0,00047	0,00088	0,00095	0	0
20	NN20	0,00101	0,00262	0,00045	0	0
21	NN21	0,00096	0,000808	0,00053	0	0
22	NN22	0,00066	0,001139	0,00077	0	0
23	NN23	0,00073	0,000723	0,00029	11	0
24	NN24	0,00066	0,00032	0,00045	0	0
25	NN25	0,00056	0,000975	0,00025	0	0
26	NN26	0,0006	0,000831	0,00082	0	0
27	NN27	0,00064	0,002854	0,00054	0	0
28	NN28	0,00056	0,002791	0,00073	0	0

Hà Nội, Ngày 15 tháng 02 năm 2015

T/M nhóm phân tích	P. Trưởng phòng	Viện Nước, Tưới tiêu và Môi trường
Lê Văn Cư	Vũ Quốc Chính	VIỆN TRƯỞNG Vũ Thị Thanh Hường

Table A6-4: Analysis results of sludge

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội
Tel: 844-8.539.127
Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU BÙN ĐÁY

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc, tỉnh Bình Thuận

Tháng 2 năm 2015

TT	Kí hiệu mẫu	Đơn vị	BD1	BD2	BD3	BD4	BD5	BD6	BD7	BD8	BD9	BD10
1	pH_{H2O}	-	5,36	5,65	5,37	6,57	6,48	6,58	5,57	5,99	6,38	5,40
2	pH_{KCl}	-	4,89	5,19	4,81	5,92	4,98	5,04	5,02	5,48	5,83	4,95
3	Mùn tổng số	%	1,68	2,10	2,71	1,37	1,32	1,84	1,99	1,51	1,47	2,64
4	N ts	%	0,081	0,092	0,108	0,069	0,064	0,060	0,053	0,035	0,058	0,073
5	P ts	%	0,031	0,034	0,040	0,032	0,029	0,015	0,018	0,016	0,025	0,016
6	K ts	%	0,188	0,138	0,225	0,216	0,173	0,192	0,089	0,089	0,121	0,132
7	Fe	mg/kg đất khô	79,84	89,12	75,44	75,60	80,05	79,46	89,72	81,86	77,16	83,15
8	Al^{3+}	ldlg/100g	0,166	0,152	0,165	0,137	0,139	0,136	0,159	0,140	0,142	0,162
9	Thành phần cơ giới	0,02-2mm	73,35	86,00	75,63	82,00	79,03	88,07	90,35	92,88	84,00	82,32
		0,02-0,002 mm	19,23	9,88	17,85	16,58	2,57	10,88	7,90	6,30	11,60	15,40
		<0,002mm	7,42	4,12	6,52	1,42	18,40	1,05	1,75	0,82	4,40	2,28
10	Ca^{2+}	ldlg/100g	1,60	2,80	1,60	8,40	4,40	3,76	1,92	2,80	1,20	3,12
11	Mg^{2+}	ldlg/100g	1,20	0,80	3,20	3,60	2,00	1,44	1,28	0,40	1,60	0,24
12	As	mg/kg đất khô	1,67	3,06	2,56	3,88	2,07	1,88	2,64	3,15	3,27	3,82
13	Pb	mg/kg đất khô	7,95	8,04	7,37	8,55	8,04	7,09	6,28	7,46	6,89	7,61
14	Cd	mg/kg đất khô	0,142	0,128	0,210	0,165	0,129	0,154	0,236	0,289	0,243	0,193
15	Cu	mg/kg đất khô	8,16	14,48	12,22	13,63	10,22	11,05	7,99	10,86	13,06	8,69
16	Zn	mg/kg đất khô	41,74	48,02	60,63	67,74	55,08	49,16	68,89	56,03	45,29	51,32

T/M Nhóm phân tích

Lê Văn Cư

Trưởng phòng Thí nghiệm Tổng hợp

Vũ Quốc Chính

Hà Nội, Ngày 5 tháng 3 năm 2015
Viện Nước, Tưới tiêu và Môi trường

VIỆN NƯỚC TƯỚI TIÊU VÀ MÔI TRƯỜNG

PHÓ VIỆN TRƯỞNG

Vũ Thị Thanh Hường

Table A6-5: Analysis results of soil quality

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội Tel: 844-8.539.127 Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU ĐẤT

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc, tỉnh Bình Thuận
Tháng 2 năm 2015

TT	Kí hiệu mẫu	pH-H_2O	pH-KCl	Mùn tổng số	N ts	P ts	K ts	N dt	P dt	K dt	Thành phần cơ giới			Ca^{2+}	Mg^{2+}
		-	-	%	%	%	%	mg/100g	mg/100g	mg/100g	0,02-2mm	0,02-0,002mm	<0,002mm	ldlg/100g	ldlg/100g
1	Đ1	6,07	5,51	1,11	0,048	0,016	0,138	0,21	1,72	3,8	76,73	22,25	1,02	3,2	3,6
2	Đ2	5	4,61	1,73	0,034	0,014	0,153	0,17	2,58	5,3	89,27	10,03	0,7	1,36	0,88
3	Đ3	5,02	4,51	1,49	0,037	0,015	0,237	0,18	2,29	3,8	83,43	15	1,57	1,92	1,04
4	Đ4	6,12	5,54	1,03	0,048	0,018	0,161	0,21	1,43	6,04	86,35	12,7	0,95	2,8	1,6
5	Đ5	6,26	5,66	1,49	0,051	0,019	0,165	0,23	1,72	3,18	68,7	24,65	6,65	1,6	2,4
6	Đ6	5,17	4,57	1,55	0,039	0,013	0,241	0,19	2,58	5,63	75,68	19,02	5,3	3,04	0,56
7	Đ7	4,77	4,16	2,43	0,067	0,016	0,157	0,28	4,01	4,12	80,3	13,95	5,75	2,24	0,8
8	Đ8	5,26	4,73	1,39	0,04	0,016	0,365	0,195	2,29	4,64	69,63	15,94	14,43	1,6	2
9	Đ9	4,72	4,12	1,37	0,063	0,015	0,343	0,27	1,72	6,02	70,35	23,27	6,38	2,16	0,88
10	Đ10	5,97	5,47	1,3	0,056	0,027	0,956	0,24	3,72	4,45	54,45	32,97	12,58	4,4	3,6
11	Đ11	4,29	3,75	1,2	0,039	0,01	0,939	0,19	2,58	10,2	84,2	11,93	3,87	1,52	1,52
12	Đ12	5,59	5,09	3,74	0,088	0,032	0,343	0,34	2,29	5,41	58,63	36,35	5	8,8	4,4
13	Đ13	5,9	5,35	1,74	0,084	0,044	0,914	0,32	4,58	4,97	60,65	30,2	9,15	4,64	1,36
14	Đ14	4,75	4,25	1,9	0,046	0,011	0,245	0,2	1,43	5,7	78,65	16,1	5,25	1,04	0,56
15	Đ15	4,58	4,03	3,18	0,109	0,013	0,266	0,39	3,15	4,64	59,47	32,2	8,33	2,48	1,28
16	Đ16	4,85	4,29	1,49	0,05	0,015	0,161	0,21	2,58	5,07	82,53	12,62	4,85	1,36	0,88
17	Đ17	5,93	4,4	1,34	0,043	0,017	0,233	0,18	2,86	6,04	68,83	14,35	16,82	2,8	1,6
18	Đ18	4,64	4,15	1,91	0,043	0,014	0,184	0,18	1,72	6,71	78,7	12,47	8,83	2	1,12
19	Đ19	4,78	4,56	1,66	0,042	0,017	0,067	0,17	2	5,09	92,68	4,94	2,38	0,96	0,56
20	Đ20	6,05	5,45	0,92	0,043	0,021	0,103	0,17	2,86	2,65	84,35	14,22	1,43	1,2	0,8
21	Đ21	6,47	5,02	1,6	0,04	0,011	0,139	0,15	3,44	6,02	97,6	1,67	0,73	2,8	1,6
22	Đ22	6,04	5,64	1,6	0,036	0,011	0,138	0,12	2,58	4,97	79,57	18,67	1,76	1,36	0,64

23	**D23**	6,47	5,92	1,3	0,046	0,022	0,169	0,2	4,29	3,8	77,73	20,75	1,52	2,4	1,6
24	**D24**	5,04	4,63	0,61	0,044	0,016	0,113	0,11	3,72	2,54	80,92	18,3	0,78	1,2	1,2
25	**D25**	5,86	5,24	0,68	0,035	0,015	0,124	0,11	2,29	1,92	76,77	22,35	0,88	1,6	1,2
26	**D26**	4,88	4,36	1,89	0,045	0,013	0,169	0,19	2,00	10,17	82,97	15,15	1,88	1,52	1,12
27	**D27**	4,81	4,28	1,2	0,054	0,013	0,181	0,1	2,29	4,77	81,53	9,23	9,24	1,28	0,48
28	**D28**	6,23	5,7	0,71	0,036	0,021	0,124	0,12	3,72	2,65	82,4	16,18	1,42	1,6	1,2

Hà Nội, Ngày 15 tháng 05 năm 2015

T/M Nhóm phân tích

Lê Văn Cư

P. Trưởng phòng Thí nghiệm Tổng hợp

Vũ Quốc Chính

Viện Nước, Tưới tiêu và Môi trường

VIỆN NƯỚC TƯỚI TIÊU VÀ MÔI TRƯỜNG

PHÓ VIỆN TRƯỞNG

Vũ Thị Thanh Hương

Table A6-6: Analysis results of air quality

Viện Nước, Tưới tiêu và Môi trường
Phòng Thí nghiệm Tổng hợp
Địa chỉ: 1/95 – Chùa Bộc – Đống Đa – Hà Nội Tel: 844-8.539.127 Fax: 844-5.634.809

BẢNG KẾT QUẢ PHÂN TÍCH MẪU KHÔNG KHÍ

Tiểu dự án: Sửa chữa nâng cao an toàn hồ chứa nước sông Quao, huyện Hàm Thuận Bắc, tỉnh Bình Thuận

Tháng 2 năm 2015

TT	Kí hiệu mẫu	Độ rung	Tiếng ồn	Bụi tổng số	SO2	NO2	CO
		dB	dBA	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
1	KK1	0,013	35,13	36,8	48	27	2112
2	KK2	0,018	25,05	30,2	46	34	1517
3	KK3	0,021	19,54	23,5	32	25	1316
4	KK4	0,011	12,86	34,5	50	42	2101
5	KK5	0,007	12,34	34,7	40	24	1827
6	KK6	0,012	19,52	60,3	43	40	2321
7	KK7	0,012	46,16	40,3	50	35	1903
8	KK8	0,013	18,03	24,3	54	30	1708
9	KK9	0,016	30,15	31,4	40	34	2105
10	KK10	0,010	15,07	36,2	37	36	1609
11	KK11	0,015	20,02	28,9	45	38	1828
QCVN 05:2009		-	-	300	350	-	30000
QCVN 26:2010		-	70	-	-	-	-

Hà Nội, Ngày 15 tháng 03 năm 2015

T/M nhóm phân tích

Lê Văn Cư

Trưởng phòng

Viện Nước, Tưới tiêu và Môi trường

PHÓ VIỆN TRƯỞNG

Vũ Thị Thanh Hường

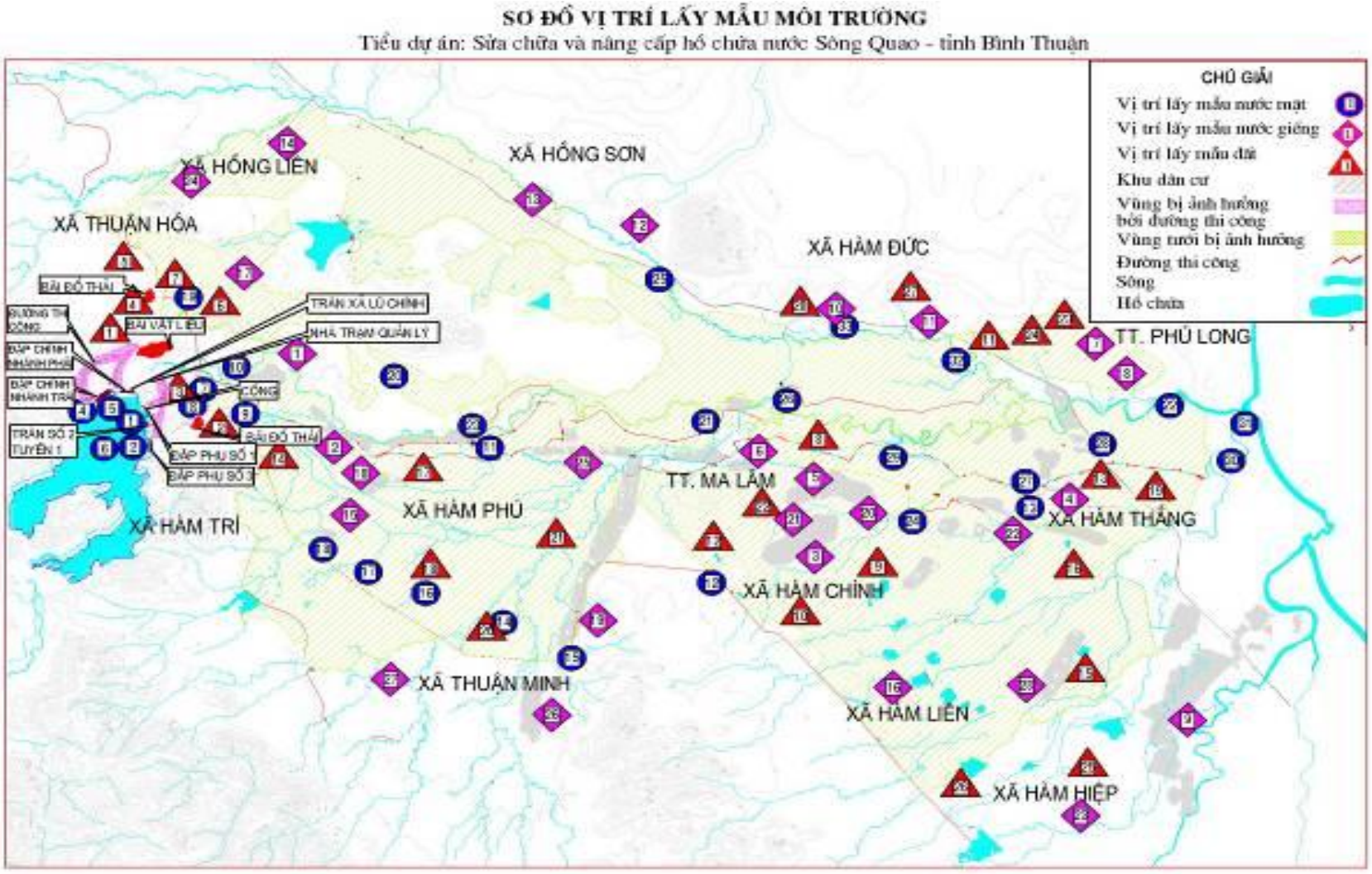

Figure 5.3: Map location sampling of environment samples

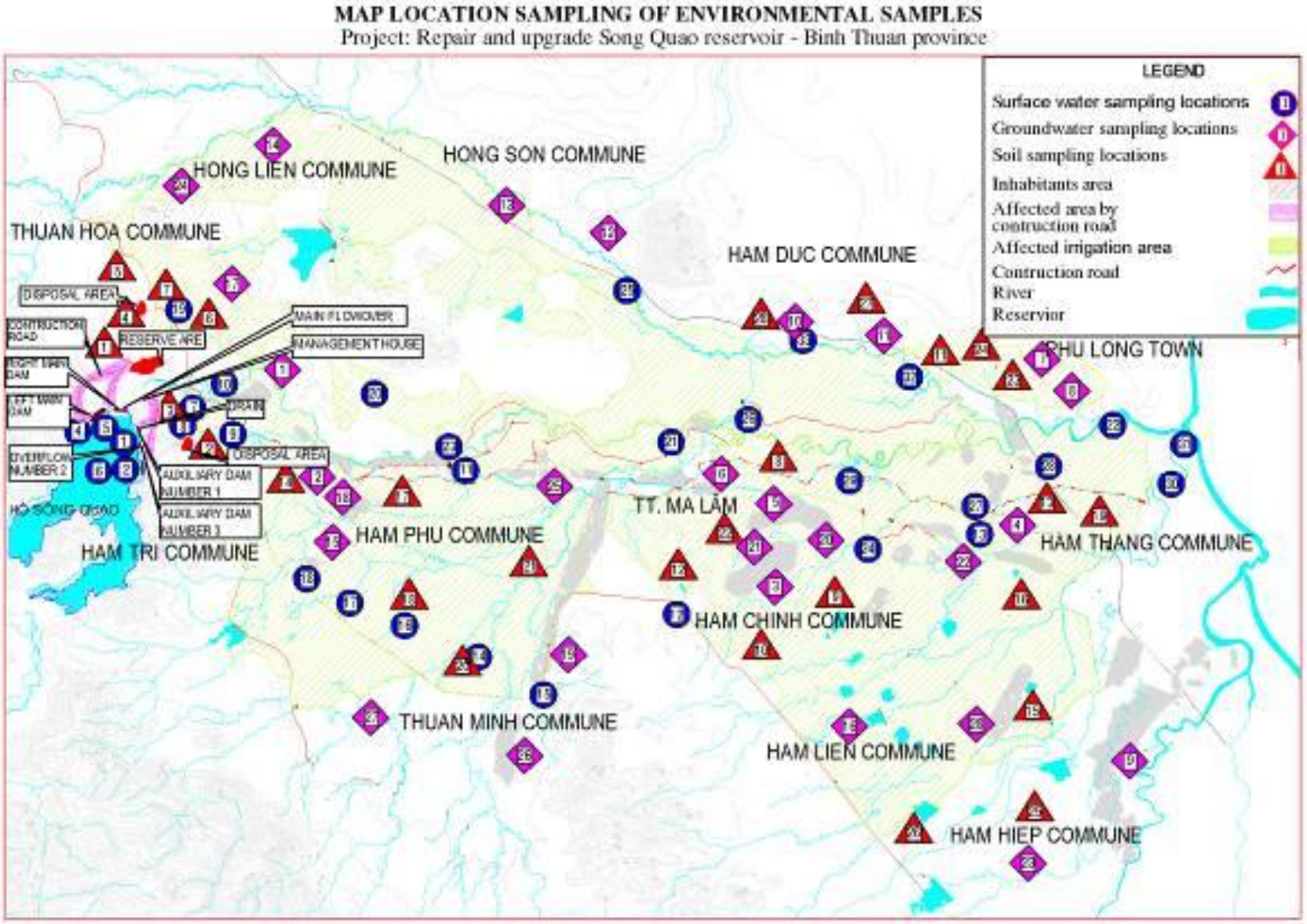

Figure 5.4: Map location sampling of environment samples

APPENDIX A7: COMMUNITY CONSULTATION MINUTES

7.1. Consultation minutes for subproject preparation

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

BIÊN BẢN CUỘC HỌP THAM VẤN CHUẨN BỊ DỰ ÁN

1- Tên dự án: **Sửa chữa và nâng cao an toàn đập (WB8)**
2- Tiểu dự án: Sửa chữa & nâng cấp hồ chứa nước Sông Quao
3- Thời gian họp: 14h ngày 03 tháng 02 năm 2015
4- Địa điểm họp: Sở NN & PTNT
5- Thành phần cuộc họp

a) Đại diện Sở NN và PTNT Bình Thuận
Ông (bà): Nguyễn Hữu Phước — Chức vụ: PGĐ sở

b) Đại diện Sở TN&MT Bình Thuận
Ông (bà): Nguyễn Văn Tâm — Chức vụ: TP

c) Đại diện Ban Quản lý dự án
Ông (bà): Nguyễn Trọng Công — Chức vụ: PGĐ ban

d) Đại diện UBND các huyện
Ông (bà): Trần Đăng Thọ — Chức vụ: TP Phòng NN & PTNT - Hàm Thuận Bắc
Ông (bà): Phan Văn Minh - Xã Thuận Minh — Chức vụ: PCT xã
Ông (bà): Đoàn Thanh Phương - Xã Hàm Thắng — Chức vụ: PCT xã
Ông (bà): Nguyễn Quang Minh - X. Hàm Liêm — Chức vụ: CT
Ông (bà): Võ Ngọc Hùng - P. Phú Hài — Chức vụ: PCT phường

e) Đại diện UBND các xã vùng dự án: ...
Ông (bà): Thái Đức Kiệt - X. Hàm Hiệp — Chức vụ: PCT xã
Ông (bà): Lê Ngọc Bình - X. Hàm Phú — Chức vụ: PCT xã
Ông (bà): Huỳnh Văn Tiến - X. Hàm Chính — Chức vụ: PCT xã
Ông (bà): Lê Thanh Ba - Xã Hàm Trí — Chức vụ: PCT xã
Ông (bà): Võ Hùng Cần - X. Hàm Đức — Chức vụ: PCT xã
Bà Lê Thị Hoa - X. Thuận Hòa — Chức vụ: PCT xã

f) Đại diện công ty QLKT CTTL
Ông (bà): Phan Ngọc Nam — Chức vụ: Phòng [illegible]

g) Đại diện đơn vị tư vấn
Ông (bà): Nguyễn Bá Phong — Chức vụ: Trưởng đoàn
Ông (bà): Hà Văn Minh — Chức vụ: Cán bộ

6. Nội dung cuộc họp
a) Đại diện Ban QLDA, ông: Nguyễn Trọng Công trình bày nội dung các TDA.
b) Đại diện đoàn tư vấn: Nguyễn Bá Phong giới thiệu các chính sách an toàn

môi trường của WB và Chính phủ Việt Nam và xã hội, tiến độ chuẩn bị dự án và các tài liệu chuẩn bị.

7. Các ý kiến thảo luận:

7.1- Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

a) Về phạm vi ảnh hưởng *(Ghi số xã, huyện, số hộ, số người, diện tích đất tự nhiên trong vùng dự án)*: .....

- 7 xã bị ảnh hưởng: xã Hàm Trí, xã Phú Hài, xã Thuận Hải, TT Phú Long, xã Hàm Thắng, TT Mũi Né, xã Hàm Chính - huyện Hàm Thuận Bắc.

b) Về các đối tượng bị ảnh hưởng *(Đất nông nghiệp, đất lâm nghiệp, thủy sản và các loại khác, số hộ bị ảnh hưởng (thu hồi đất, di dân, di chuyển mồ mả...), tỷ lệ người dân tộc thiểu số bị ảnh hưởng, số người được hưởng lợi, tỷ lệ hộ nghèo, di tích lịch sử văn hóa, số mồ mả bị di dời)*:

Thu hồi đất của 18 hộ (77 người)

Thu hồi diện di dời 10 hộ dân.

Có 8 hộ là 1 người DTTS bị ảnh hưởng

Không có mồ mả phải di dời

7.2 Về tác động của dự án đến môi trường:

- Tác động tích cực *(hạn chế ngập lụt vùng hạ du, hạn chế các sự cố vỡ đập, tràn, cống, tạo việc làm, tăng thu nhập, tăng diện tích tưới, tăng năng suất cây trồng, NTTS, nâng cao đời sống... vùng được hưởng lợi và đối tượng được hưởng lợi)*:

Phục vụ tưới cho 11.120 ha đất Sx nông nghiệp

- Tác động tiêu cực *(Tác tiêu cực có thể xảy ra trong quá trình chuẩn bị, thi công và vận hành dự án và những khu vực bị ảnh hưởng, đối tượng bị ảnh hưởng. Các tác động tiêu cực có thể xảy ra như: Ô nhiễm môi trường đất, nước, không khí, sản xuất, thu nhập, mất việc làm, bị ngừng các dịch vụ công cộng...)*:

Gây ra bụi, tiếng ồn khi thi công các hạng mục của TDA.

Ảnh hưởng tới nguồn dân khi vận chuyển nguyên vật liệu, chất thải?

7.3- Tác động của dự án đến xã hội:

- Tác động tích cực *(Tạo việc làm, tăng thu nhập, tăng diện tích tưới, tăng năng suất cây trồng, NTTS, nâng cao đời sống...)*

Ổn định nước tưới cho 11.120 ha đất sản xuất nông nghiệp và 1.159 ha NTTS.

- Tác động tiêu cực : Ảnh hưởng tới người dân xung quanh do quá trình thi công tập trung nhiều công nhân.

7.4- Kiến nghị của các địa phương trong vùng dự án/ cơ đồng tình với các nội dung của dự án không?

Nhất trí thực hiện tiểu dự án để đảm bảo an toàn hơ chưa.

Cần cảnh báo thông tin cho các địa phương có ảnh hưởng khi hồ phải xả lũ.

7.6- Kiến nghị của các ngành liên quan:

Yêu cầu nhà thầu thực hiện thi công đúng tiến độ.

Có biện pháp bổ xung nguồn nước thải phục vụ canh tác sx nông nghiệp trong giai đoạn sửa chữa.

Thông báo, cảnh báo cho người dân để có biện pháp di dời bảo vệ tài sản.

Khu phụ tạo đảm bảo không ngập nước trong quá trình thi công bố trí khu bãi trại trong hành lang chiếm đất vĩnh viễn hạ lưu đập, tránh việc đền bù, giải phóng mặt bằng.

8- Kết luận:

Phạm vi ảnh hưởng bao gồm 7 xã.

Thu hồi đất của 18 hộ dân (77 người).

Thu hồi di dời 10 hộ dân.

Đề nghị chủ đầu tư thực hiện các biện pháp bảo vệ môi trường để tránh làm ảnh hưởng tới người dân.

Chủ trì hội nghị

Thư ký hội nghị

Sở Nông nghiệp & PTNT

PHÓ GIÁM ĐỐC

Nguyễn Hữu Phước

Sở TN&MT

Ban Quản lý dự án

Công ty QLKT CTTL

UBND Huyện

UBND Huyện

Lê Ngọc Bình

UBND Huyện .....

UBND Huyện

UBND Xã Hàm Hiệp

Thái Đức Khiết

UBND Xã

Đoàn Thanh Thường

UBND phường Phú Hài

Võ Văn Hùng

Phượng Văn Cẩm

UBND Xã Thuận Minh

Phạm Văn Minh

UBND Xã Hàm Liêm

Nguyễn Văn Tuấn

Đại diện UBND xã Hàm Ái

Lê Thanh An

Đại diện UBND xã Tân Hà

Lê Văn Cần.

Đại diện UBND xã Tân Hà

Lê Thị Hòa

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc
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Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án ...Hồ...Sông...Quao...Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Thuận Hòa, ngày 05 tháng 01 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian:.....8 giờ.....05/01/2015.....
- Địa điểm : .....UBND xã.....Thuận Hòa.....

2. Thành phần:

- Đơn vị tư vấn :

.....- Tư vấn môi trường.....
.....- Đại diện CT&TCTL Bình Thuận.....
.....
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- Số lượng đại biểu tham dự: .....17....., trong đó: Nam:.....13..... Nữ .....4.....
- Thành phần.....

.....- UBND xã.....- VP thống nhất xã.....
.....- Mặt trận TQ.....- Đoàn Thanh niên xã.....
.....- Hội phụ nữ xã.....- Hội nông dân xã.....
.....- VP địa chính - xây dựng xã.....- Các trưởng ấp, thôn..
.....- người dân trong xã.....

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% ủng hộ dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

xóm Thuần Hòa

- Về các đối tượng bị ảnh hưởng:

người dân trong xã gần khu vực

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

Đáp ứng nhu cầu tăng đáng kể cho
ứng khu làm, tạo điều kiện cho nhân dân chuyển
đổi cơ cấu cây trồng, phát triển sản xuất, tăng
thu nhập cho người dân

- Tác động tiêu cực

Có thể gây ô nhiễm môi trường không khí tăng tạm thời
Thiếu nước tưới trong thời gian thi công, thiếu chuẩn
Có thể gây ảnh hưởng đến đời sống sinh hoạt
thi công do tập trung công nhân

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

Áp dụng các biện pháp giảm thiểu tác động đến môi
trường như biển chỉ chắn cẩn thận các phương tiện
vào ra vận chuyển vật liệu

2

e)Kiến nghị đối với chủ dự án:

- Đẩy nhanh tiến độ, chất lượng dự án
- Xem xét đầu tư hệ thống cống kênh Bãi Sông Cao

UBND XÃ Thuận Hòa

Chủ tịch

Lê Thị Hòa

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc
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Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án Hàm Thuận - Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Hàm Chính ngày 06 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 8 giờ 06/02/2015
- Địa điểm : Trụ sở UBND xã Hàm Chính

2. Thành phần:

- Đơn vị tư vấn :

- Tư vấn môi trường
- Đại diện Chi nhánh CTTL Bình Thuận

- Số lượng đại biểu tham dự: 13, trong đó: Nam: 9 Nữ 4
- Thành phần

- UBND xã
- VP Đảng ủy xã
- Hội cựu chiến binh xã
- Hội người cao tuổi xã
- MTTQ xã
- Chi hội nông dân
- Phòng nông nghiệp
- người dân

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% đều đồng ý với chủ đầu tư

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

- trong xã Hưng Chính

- Về các đối tượng bị ảnh hưởng:

- người dân

- Chủ yếu canh tác, sản xuất nông nghiệp

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

- Đảm bảo đầu tào cho người dân có thêm thêm canh tác, sản xuất nông nghiệp trong mùa mưa, lũ

- Tác động tiêu cực

- Ảnh hưởng đến người dân đi vận chuyển VLXD

- Thiếu nước sản xuất do thoát nước không tốt thường

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

- Bố trí vận chuyển VLXD vào thời gian hợp lý để ổn định sinh hoạt bình thường của người

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e)Kiến nghị đối với chủ dự án:

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- Đảm bảo tiến độ, chất lượng của dự án

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UBND XÃ...Hàm Chính...

ỦY BAN NHÂN DÂN

Chủ tịch

KT. CHỦ TỊCH

PHÓ CHỦ TỊCH

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CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc
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Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án ...Ma Sông Quao... Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Ma Lâm, ngày 09 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 14h 09/02/2015
- Địa điểm : Thu nhà UBND TT Ma Lâm

2. Thành phần:

- Đơn vị tư vấn :

Tư vấn môi trường
Đại diện CT XDCTTL Bình Thuận

- Số lượng đại biểu tham dự: 18, trong đó: Nam: 15 Nữ 3
- Thành phần: UBND xã — Hội Nông dân xã
Hội cựu chiến binh xã — Hội phụ nữ xã
Hội nông dân xã — Phòng địa chính xã
Phòng nông nghiệp xã — Mặt trận tổ quốc xã
Người dân xã — Cán bộ phòng phó thôn

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% đồng ý triển khai dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

Khu vực mà hầu hết biết khu vực có huyện xả lũ bùn đất gây ra

- Về các đối tượng bị ảnh hưởng:

- Người dân
- Diện tích canh tác, sản xuất nông nghiệp

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

- Đảm bảo an toàn cho người dân và tài sản của họ
- Đảm bảo cung cấp đủ nước cho sản xuất canh tác

- Tác động tiêu cực

- Có thể xảy ra sự cố trong quá trình vận hành nước thải gây ảnh hưởng đến người dân

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

- Có phương tiện chở VLXD di chuyển vào thời gian hợp lý tránh gây ảnh hưởng đến người dân

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e)Kiến nghị đối với chủ dự án:

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- Đảm bảo an toàn khách TRA dùng nếu có
- Đảm bảo chất lượng dự án

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UBND XÃ ...Tà Lèn...

Chủ tịch

Huỳnh Thị Ái Vi

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc
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Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án Nâng cấp hồ chứa nước Đồng Quao - Đập Đan sách

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Hàm Thắng ngày 10 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 8 giờ 10/02/2015
- Địa điểm : Trụ sở UBND xã Hàm Thắng

2. Thành phần:

- Đơn vị tư vấn :

Tư vấn môi trường
Đại diện công ty TNHH MTV Khai thác CTTL Bình Thuận

- Số lượng đại biểu tham dự: 10, trong đó: Nam: 9 Nữ 1
- Thành phần

MTTQ xã
Đại diện hộ dân
Đại diện các ban ngành đoàn thể xã
Hà nông cảo
UBND xã

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% đồng ý triển khai dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

của dân cư năm dọc tuyến xả lũ

- Về các đối tượng bị ảnh hưởng:

Người dân trong xã là các hộ dân dọc tuyến xả lũ

Diện tích canh tác, sản xuất nông nghiệp

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

Đảm bảo an toàn cho người dân và diện tích canh tác sản xuất nông nghiệp

- Tác động tiêu cực

Thiệt hại sản xuất trong thời gian thi công xây dựng

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

Thực hiện đúng các biện pháp giảm thiểu ô nhiễm môi trường

Tập chuyển vật liệu xây dựng đúng quy định

2

tránh làm ảnh hưởng

e)Kiến nghị đối với chủ dự án:

- Đảm bảo thi công dự án đúng tiến độ, đảm bảo yêu cầu kỹ thuật tránh gây ảnh hưởng tới MT-XH

UBND XÃ... Hàm Thắng

Chủ tịch

Nguyễn Minh Tí...

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc
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Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án ...Hồ Sông Quao... Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Phú Hài ... ngày 11 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 8h 30 11 - 02 - 2015
- Địa điểm : tại UBND P. Phú Hài

2. Thành phần:

- Đơn vị tư vấn :

Tư vấn môi trường
Đại diện công ty TNHH MTV KT CTTL Bình Thuận

- Số lượng đại biểu tham dự: 13, trong đó: Nam: 10 Nữ 3
- Thành phần

Lãnh đạo UBND phường
Đại diện của thôn 1&2

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% đồng ý với khi dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

khu vực lân cận Cảng Cái Phan Thiết

- Về các đối tượng bị ảnh hưởng:

Tàu bè neo đậu trên sông và người dân sinh sống dọc sông Cái Phan Thiết

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

Đảm bảo an toàn cho người dân và tàu bè neo đậu

- Tác động tiêu cực

Ảnh hưởng từ người dân trong quá trình vận chuyển nguyên vật liệu

Có thể gây ra bụi khi xây dựng nhà máy

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

Thi công đúng kỹ thuật để đảm bảo không gây ảnh hưởng đến PTT-XH

e)Kiến nghị đối với chủ dự án:

Đảm bảo thi công đúng thiết kế

Thực hiện các biện pháp giảm thiểu ô nhiễm môi trường làm ảnh hưởng tới người dân

UBND XÃ Nguyễn Phú Trọng

Chủ tịch

PHÓ CHỦ TỊCH

Võ Ngọc Hùng

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

Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án ...Hồ chứa nước Sông Quao – Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Phú Long, ngày 12 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 8 giờ ngày 12/02/2015
- Địa điểm : Trụ sở UBND TT Phú Long

2. Thành phần:

- Đơn vị tư vấn :

– Tư vấn phó trưởng
– Đại diện Cty TNHH MTV khai thác CTTL Bình Thuận

- Số lượng đại biểu tham dự: 10, trong đó: Nam: 8 Nữ 2
- Thành phần

– Lãnh đạo UBND
– Đại diện Mặt trận, thanh niên, MTTQ, phụ nữ thôn
– Đại diện hộ nông dân

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

100% đồng ý triển khai dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

Khu vực gần và tuyến sử lũ

- Về các đối tượng bị ảnh hưởng:

- Diện tích canh tác, sản xuất vùng nghiệp

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

- Đảm bảo an toàn trong mùa mưa lũ
- Đảm bảo cấp nước cho sản xuất vùng nghiệp

- Tác động tiêu cực

Không có

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

- Đảm bảo tiến độ thi công

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e)Kiến nghị đối với chủ dự án:

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- Đẩy nhanh tiến độ thi công

- Thực hiện nghiêm túc các biện pháp giảm thiểu tác động môi trường

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UBND XÃ...Phú Long

Chủ tịch

Lê Thanh Long

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

Dự án cải tạo và nâng cao an toàn đập (WB8)
Tiểu dự án ..Sông Quao - Bình Thuận

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Hàm Trí, ngày 13 tháng 02 năm 2015

1- Thời gian, địa điểm làm việc:

- Thời gian: 8g00 13/02/2015
- Địa điểm : Trụ sở UBND xã Hàm Trí

2. Thành phần:

- Đơn vị tư vấn :

– Đại diện công ty khai thác CTTL Bình Thuận
– Tư vấn môi trường

- Số lượng đại biểu tham dự: 23, trong đó: Nam: 13 Nữ 10
- Thành phần

– UBND xã	– MTTQ xã
– Đoàn Thanh niên	– Hội phụ nữ
– Hội nông dân	– VP. Hội chữ thập đỏ
– Hội C.C.B	– VP. Nông nghiệp xã
– Các trưởng thôn	– Người dân tham gia

3. Nội dung tham vấn

Hội nghị đã triển khai các nội dung tham vấn như sau:

- Giới thiệu về nội dung, các hạng mục công trình của dự án
- Về sự đồng thuận đối với việc triển khai dự án
- Về các đối tượng bị ảnh hưởng và phạm vi ảnh hưởng
- Về tác động tích cực của dự án đến môi trường, xã hội
- Về tác tiêu cực đến môi trường, xã hội
- Các kiến nghị của cộng đồng về các biện pháp giảm thiểu tác động đến môi trường, xã hội

4. Ý kiến thảo luận:

1

a) Về sự đồng thuận của địa phương đối với dự án:

UBND đồng ý triển khai dự án

b) Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

- Về phạm vi ảnh hưởng:

Toàn bộ phạm vi xã

- Về các đối tượng bị ảnh hưởng:

- Người dân
- Diện tích canh tác, sản xuất nông nghiệp

c) Về những tác động của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

- Tác động tích cực:

- Đảm bảo an toàn cho người dân về diện tích canh tác
- Đảm bảo đủ nước tưới cho CS.NN

- Tác động tiêu cực

- Cắt nước cho sản xuất phục vụ thi công
- Vận chuyển VLXD có thể gây hư hỏng đường sá, đời sống người dân trong xã

d) Kiến nghị các biện pháp giảm thiểu tác động môi trường của Dự án:

- Thực hiện nghiêm túc các biện pháp giảm thiểu tác động của dự án đến MT-XH
- Thi công đúng kỹ thuật, đáp ứng đảm bảo tiến độ

e)Kiến nghị đối với chủ dự án:

- Thực hiện thi công theo đúng tiến độ
- Áp dụng các biện pháp giảm thiểu tác động xấu tới môi trường

UBND XÃ Hàm Liêu

pChủ tịch

Lê Thanh Sơn

7.2 Consulation minutes of mitigation measures

ỦY BAN NHÂN DÂN
XÃ Thuận Hòa

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

Số: 05..CV-UBND

Thuận Hòa, ngày 16 tháng 02 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV KTCTTL Bình Thuận

UBND xã Thuận Hòa đã nhận được Văn bản số 01 ngày 09 tháng 02 năm 2015 của Cty TNHH MTV KTCTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận.**". Sau khi xem xét tài liệu này, UBND xã Thuận Hòa có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Chúng tôi đồng ý với các nội dung trình bày trong tài liệu

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Chúng tôi đồng ý với các nội dung trình bày trong tài liệu

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Cùng với việc sửa chữa và nâng cao an toàn đập Sông Quao, nhân dân xã Thuận Hòa kiến nghị chủ dự án đầu tư tuyến [illegible] Sông Quao để mở rộng diện tích tưới cho bà con nhân dân ở xã Thuận Hòa.

Trên đây là ý kiến của UBND xã Thuận Hòa gửi Công ty TNHH MTV KT CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

ỦY BAN NHÂN DÂN
XÃ Thuận Hòa
CHỦ TỊCH

Lê Thị Hòa

2

MẶT TRẬN TỔ QUỐC
XÃ Thuận Hòa

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

Số: 02.CV-MTTQ

Thuận Hòa, ngày 16 tháng 02 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh. Bình Thuận

Kính gửi: Công ty TNHH MTV KT CTTL Bình Thuận

MTTQ xã Xã Thuận Hòa nhận được Văn bản số 01 ngày 29 tháng 01 năm 2015 của Công ty TNHH MTV KT CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh...Bình Thuận**". Sau khi xem xét tài liệu này, MTTQ xã Xã Thuận Hòa có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Chúng tôi đồng ý trong tất cả các tài liệu đã gửi. Không có ý kiến gì.

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Chúng tôi đã đồng ý cho tất cả các tài liệu đã gửi trên.

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

.................Chúng tôi đề nghị chủ dự án sớm triển khai dự án. Nếu có việc khu dự án bị ảnh hưởng khi công trình [illegible] sớm nhất để để tránh tác động không tốt môi trường...

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Trên đây là ý kiến của MTTQ xã..Thuận Hòa...............

gửi........Công...ty.....TNHH.....MTV.....KTCTTL....Bình.....Thuận..........để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

MẶT TRẬN TỔ QUỐC
XÃ..THUẬN HÒA......
CHỦ TỊCH

Huỳnh Ngọc Bình

2

ỦY BAN NHÂN DÂN
XÃ Nam Chính

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

Số: 03..CV-UBND

Nam Chính, ngày 27 tháng 2 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV KT CTTL Bình Thuận

UBND xã Nam Chính đã nhận được Văn bản số 03 ngày 29 tháng 01 năm 2015 của Công ty TNHH MTV KT CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**". Sau khi xem xét tài liệu này, UBND xã Nam Chính có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Khi thi công chọn thời điểm thích hợp nhất tránh ảnh hưởng về việc sử dụng nguồn nước của bà con cho sinh hoạt và sản xuất.
- thực hiện đúng cam kết về giảm thiểu các tác động xấu về môi trường.

Trên đây là ý kiến của UBND xã Nam Chính gửi Công ty TNHH MTV Đất KS STL hoàn thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

ỦY BAN NHÂN DÂN
XÃ Nam Chính
KT. CHỦ TỊCH

Nguyễn Văn Hiền

MẶT TRẬN TỔ QUỐC
XÃ Hàm Chính

Số: 03..CV-MTTQ

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh. Bình Thuận

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

Hàm Chính, ngày 17 tháng 02 năm 2015

Kính gửi: Công ty TNHH MTV KT CTTL Bình Thuận

MTTQ xã Hàm Chính nhận được Văn bản số 03 ngày 29 tháng 01 năm 2015 của Công ty TNHH MTV KT CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh. Bình Thuận**". Sau khi xem xét tài liệu này, MTTQ xã Hàm Chính có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Khi thi công chọn thời điểm thích hợp nhất, tránh ảnh hưởng đến thời gian sử dụng nguồn nước của hộ chăn nuôi các hoạt động sản xuất.

Chủ đầu tư cần có biện pháp giảm thiểu các tác động xấu đến môi trường.

Trên đây là ý kiến của MTTQ xã Hàm Chính gửi Công ty TNHH MTV SXTM Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

MẶT TRẬN TỔ QUỐC
XÃ Hàm Chính
P. CHỦ TỊCH

Nguyễn Thị Thế Vân

ỦY BAN NHÂN DÂN
XÃ TT Ma Lâm

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

Số: 03.CV-UBND

Ma lâm, ngày 13 tháng 02 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV KT CTTL Bình Thuận

UBND xã TT Ma Lâm đã nhận được Văn bản số 02 ngày 23 tháng 01 năm 2015 của Công ty TNHH MTV KT CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận.**". Sau khi xem xét tài liệu này, UBND xã TT Ma Lâm có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung được trình bày trong tài liệu gửi kèm

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung trong giải pháp trình bày trong tài liệu gửi kèm

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Đề nghị sớm triển khai dự án.
Khi thi công đảm bảo giảm thiểu tối đa tác động xấu tới môi trường.

Trên đây là ý kiến của UBND xã Tà Ma Lèng
gửi Công ty TNHH MTV KT CTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

UBND XÃ Tà Ma Lèng
Chủ tịch

Huỳnh Thị Ái Vi

MẶT TRẬN TỔ QUỐC
XÃ TT Ma Lâm

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

Số: 03...CV-MTTQ

Ma Lâm, ngày 18 tháng 2 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Cty KTCTTL Bình Thuận

MTTQ xã TT Ma Lâm nhận được Văn bản số 65 ngày 29 tháng 01 năm 2015 của Cty KTCTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**". Sau khi xem xét tài liệu này, MTTQ xã TT Ma Lâm có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý.

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các biện pháp giảm thiểu tác động môi trường của dự án

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Thực hiện nghiêm túc các biện pháp giảm thiểu
- Đảm bảo giữ gìn vệ sinh chất lượng dự án

Trên đây là ý kiến của MTTQ xã TT Ma Lâm gửi Ủy LTCTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

MẶT TRẬN TỔ QUỐC
XÃ TT Ma Lâm
CHỦ TỊCH

Nguyễn Hùng Dũng

2

ỦY BAN NHÂN DÂN
XÃ Hàm Thắng

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

Số: 03 CV-UBND

Hàm Thắng, ngày 19 tháng 01 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Chi TNHH MTV khai thác công trình thủy lợi Bình Thuận

UBND xã Hàm Thắng đã nhận được Văn bản số 03 ngày 09 tháng 01 năm 2015 của Chi TNHH MTV khai thác công trình thủy lợi Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**". Sau khi xem xét tài liệu này, UBND xã Hàm Thắng có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các ý kiến, nội dung tương ứng thể hiện trình bày trong tài liệu

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung sửa trình bày trong tài liệu

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Đề nghị chủ đầu tư cần có cam kết về giảm thiểu tác động tiếng ồn của phương tiện xe cộ

Trên đây là ý kiến của UBND xã Hàm Thắng gửi Công ty TNHH MTV Khai thác CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

ỦY BAN NHÂN DÂN
XÃ Hàm Thắng
CHỦ TỊCH

Nguyễn Minh Thành

MẶT TRẬN TỔ QUỐC
XÃ Hàm Thắng

Số: 03 CV-MTTQ

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

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

Hàm Thắng, ngày 19 tháng 02 năm 2015

Kính gửi: Cty T.N.H.H M.T.V Khai thác C.T.T.L Bình Thuận

MTTQ xã Hàm Thắng nhận được Văn bản số 05 ngày 29 tháng 01 năm 2015 của Cty T.N.H.H M.T.V Khai thác C.T.T.L Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh** Bình Thuận". Sau khi xem xét tài liệu này, MTTQ xã Hàm Thắng có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

- Đồng ý với các nội dung trình bày trong tài liệu gửi kèm

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

- Đồng ý với các nội dung trình bày trong tài liệu gửi kèm

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

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Cam kết thực hiện nghiêm túc các biện pháp giảm thiểu tác động đến môi trường - X.H.

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Trên đây là ý kiến của MTTQ xã Phúc Thắng gửi C.ty TNHH MTV ĐTCTL Bến Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

MẶT TRẬN TỔ QUỐC
Xã Phúc Thắng
CHỦ TỊCH

Nguyễn Ngọc Minh

ỦY BAN NHÂN DÂN
XÃ P. Phú Hải

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

Số: 04 /CV-UBND

P. Phú Hải, ngày 20 tháng 01 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV Khai thác CTTL Bình Thuận

UBND xã Phường Phú Hải đã nhận được Văn bản số 04 ngày 22 tháng 01 năm 2015 của Cty Kha TNHH MTV KT CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**" Sau khi xem xét tài liệu này, UBND xã Phường Phú Hải có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung trong tài liệu gửi kèm

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các biện pháp giảm thiểu được đề cập trong tài liệu gửi kèm

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Thực hiện nghiêm các nội dung, giải pháp giảm thiểu tác động trong quá trình thi công, vận hành.

Trên đây là ý kiến của UBND xã Phú Hội gửi Công ty TNHH MTV Thương mại Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

ỦY BAN NHÂN DÂN
XÃ Phường Phú Hài
KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Tô Ngọc Hùng

MẶT TRẬN TỔ QUỐC
XÃ Phường Phú Hải

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

Số: 03...CV-MTTQ

P. Phú Hải, ngày 20 tháng 02 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV khai thác CTTL Bình Thuận

MTTQ xã Phường Phú Hải nhận được Văn bản số 03, ngày 29 tháng 01 năm 2015 của Công ty TNHH MTV khai thác CTTL Bình Thuận, kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**". Sau khi xem xét tài liệu này, MTTQ xã P. Phú Hải có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung trong tài liệu đính kèm

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung được trình bày trong tài liệu gửi kèm

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Thực hiện các biện pháp để giảm thiểu tác động đến môi trường
- Thực hiện chu chuẩn vệ sinh các phương tiện vận chuyển vật liệu tránh gây ô nhiễm MT

Trên đây là ý kiến của MTTQ xã P. Phú Hội gửi Công ty TNHH MTV Khai thác CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

MẶT TRẬN TỔ QUỐC
XÃ Phường Phú Hội
CHỦ TỊCH

Võ Thanh Bảo

ỦY BAN NHÂN DÂN
XÃ TT phú long

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

Số 03 ...CV-UBND

phú long, ngày 23 tháng 02 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Công ty TNHH MTV Khai thác CTTL Bình Thuận

UBND xã TT Phú Long đã nhận được Văn bản số 03 ngày 23 tháng 02 năm 2015 của Công ty TNHH MTV Khai thác CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận..**". Sau khi xem xét tài liệu này, UBND xã TT Phú Long có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung trong tài liệu gửi kèm.

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các biện pháp giảm thiểu tác động môi trường của dự án.

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Thực hiện nghiêm túc, đầy đủ các cam kết về các biện pháp giảm thiểu tác động đến MT - XH

Trên đây là ý kiến của UBND xã TT Phú Long gửi Cty TNHH MTV Thương mại CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

ỦY BAN NHÂN DÂN
XÃ TT Phú Long
CHỦ TỊCH

Trần Công

MẶT TRẬN TỔ QUỐC
XÃ TT Phú Long

Số: 03 CV-MTTQ

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

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

Phú Long, ngày 23 tháng 01 năm 2015

Kính gửi: Cty TNHH MTV Khai thác CTTL Bình Thuận

MTTQ xã TT Phú Long nhận được Văn bản số 03 ngày 29 tháng 01 năm 2015 của Cty TNHH MTV Khai thác CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**". Sau khi xem xét tài liệu này, MTTQ xã TT Phú Long có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

- Đồng ý với các nội dung được trình bày trong tài liệu gửi kèm

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

- Đồng ý với các nội dung được trình bày trong tài liệu gửi kèm

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Thực hiện nghiêm túc các cam kết về giảm thiểu tác động môi trường xã hội của dự án

Trên đây là ý kiến của MTTQ xã TT Phú Long gửi Chi nhánh M.V. K.T CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

MẶT TRẬN TỔ QUỐC
XÃ TT Phú Long
P. CHỦ TỊCH

Nguyễn Quốc Hoàng

ỦY BAN NHÂN DÂN
XÃ Hàm Trí

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

Số: 03.CV-UBND

Hàm Trí, ngày 29 tháng 01 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: Cty TNHH MTV Khai Thác CTL Bình Thuận

UBND xã Hàm Trí đã nhận được Văn bản số 01 ngày 29 tháng 01 năm 2015 của Cty TNHH MTV Khai thác CTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận**....". Sau khi xem xét tài liệu này, UBND xã Hàm Trí có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các nội dung tuân thủ trình bày trong tài liệu gửi kèm.

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý với các biện pháp giảm thiểu tác động môi trường của Dự án tuân thủ trình bày trong tài liệu gửi kèm.

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Thực hiện nghiêm túc các biện pháp giảm thiểu tác động môi trường của dự án đến KT-MT

Trên đây là ý kiến của UBND xã Hàm Trí gửi Chi nhánh MTV Khai thác CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

ỦY BAN NHÂN DÂN
XÃ Hàm Trí
CHỦ TỊCH

Lê Thanh An

MẶT TRẬN TỔ QUỐC
XÃ Hàm Trí

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

Số: 05 /CV-MTTQ

Hàm Trí, ngày 29 tháng 01 năm 2015

V/v ý kiến tham vấn về dự án sửa chữa và nâng cao an toàn đập- TDA tỉnh Bình Thuận

Kính gửi: C.ty TNHH MTV Khai thác CTTL Bình Thuận

MTTQ xã Hàm Trí nhận được Văn bản số 02 ngày 29 tháng 01 năm 2015 của C.ty TNHH MTV Khai thác CTTL Bình Thuận kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án "**Sửa chữa và nâng cao an toàn đập- TDA tỉnh** Bình Thuận". Sau khi xem xét tài liệu này, MTTQ xã Hàm Trí có ý kiến như sau:

1. Về những tác động tiêu cực của Dự án đến môi trường tự nhiên và kinh tế - xã hội (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

2. Về các biện pháp giảm thiểu tác động môi trường của Dự án (*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

Đồng ý

1

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

- Phát ngắn thời gian thi công để giảm việc ô nhiễm môi trường ảnh hưởng đến sức khỏe của nhân dân xung quanh khu vực này.
- Lấn chặn vật liệu quan tâm đến việc an toàn giao thông.
- Bồi hoàn đền bù cần quan tâm để tránh việc ngập úng gây thiệt hại hoa màu, ảnh hưởng kinh tế của hộ dân nhân dân dọc theo tuyến.

Trên đây là ý kiến của MTTQ xã Hàm Thí gửi Công ty TNHH MTV Khai thác CTTL Bình Thuận để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

MẶT TRẬN TỔ QUỐC
XÃ Hàm Thí
CHỦ TỊCH

Trần Văn Khánh

APPENDIX A8- ENVIRONMENTAL SPECIFICATIONS (FOR INCLUSION IN BIDDING AND CONSTRUCTION CONTRACTS)

Construction Camp Management Plan

General Requirements

The Contractor shall, wherever possible, locally recruit the available workforce and shall provide appropriate training as necessary. The Contractor shall consider all aspects of workforce management and address potential ethnic tensions between workers and the local communities, increased risk of prostitution and communicable diseases, theft, alcohol abuse, market distortion due to temporary inputs to local economy and other local tensions such as unemployment, ethnicity and divergent cultural values.

The following general measures shall be considered for construction camps:

1. The construction camp site will have to be approved by the local authority.
2. The Contractor shall present the design of the camps including details of all buildings, facilities and services for approval no later than two months prior to commencement of any construction work. Approvals and permits shall be obtained in accordance with applicable laws, applicable standards and environmental requirements for the building and infrastructure work for each camp area.
3. The Contractor shall provide adequate and suitable facilities for washing clothes and utensils for the use of contract labor employed therein.
4. Camp site selection and access roads shall be located so as to avoid clearing of major trees and vegetation as feasible, and to avoid aquatic habitats.
5. Camp areas shall be located to allow effective natural drainage and landscaped so as to avoid erosion.
6. The Contractor shall provide suitable, safe and comfortable accommodation for the workforce.
7. The Contractor shall provide adequate lavatory facilities (toilets and washing areas) for the number of workers expected on site, plus visitors. Toilet facilities should also be provided with adequate supplies of clean or potable water, soap, and toilet paper. Separate and adequate bathing facilities shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic conditions at all times.
8. The Contractor shall implement effective sediment and erosion control measures during construction and operation of the construction work camps in accordance with the environmental requirements as stipulated by the EMP and SESIA, especially near rivers.
9. The Contractor shall provide recreational facilities to the workforce. Such facilities will help mitigate against potential conflict and impact on the local population as the incentive to go outside the camp will be reduced.
10. The Contractor shall provide safe potable water for food preparation, drinking and bathing.
11. The Contractor shall install and maintain a temporary septic tank system for any residential labor camp, without causing pollution of nearby watercourses. Wastewater

should not be disposed into any water bodies without treatment, in accordance to applicable Vietnamese standards.

12. The Contractor shall establish a method and system for temporary storage and disposal or recycling of all solid wastes generated by the labor camp and/or base camp.
13. The Contractor shall not allow the use of fuel wood for cooking or heating in any labor camp or base camp and provide alternate facilities using other fuels.
14. The Contractor shall ensure that site offices, depots, and workshops are located in appropriate areas as approved by the appropriate the Dam Safety Project environmental officer or the Supervisory Engineer.
15. The Contractor shall ensure that storage areas for diesel fuel and lubricants are not located within 100 meters of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of rain. A ditch shall be constructed around the area with an approved settling pond/oil trap at the outlet.
16. Areas for the storage of fuel or lubricants and for a maintenance workshop shall be fenced and have a compacted/impervious floor to prevent the escape of accidental spillage of fuel and or lubricants from the site. Surface water drainage from fenced areas shall be discharged through purpose designed and constructed oil traps. Empty fuel or oil drums may not be stored on site. Waste lubricants shall be recycled, and not disposed to land or adjacent water bodies.
17. The Contractor shall ensure that site offices, depots, and workshops are located in appropriate areas as agreed by local authorities and approved by the Dam Safety Project or supervisory engineer. They shall not be located within 200 meters of existing residential settlements.
18. Concrete batching plants shall not be located within 500 m of any residence, community or work place.
19. The Contractor shall provide medical and first aid facilities at each camp area; and
20. All medical related waste shall be disposed off in proper containers, or dealt with accordingly with established procedures for safe disposal.

Security

Security measures shall be put into place to ensure the safe and secure running of the camp and its residents. As a minimum, these security measures should include:

1. Access to the camp shall be limited to the residing workforce, construction camp employees, and those visiting personnel on business purposes.
2. Prior approval from the construction camp manager shall be required for visitor access to the construction camp.
3. Adequate, day-time night-time lighting shall be provided.
4. A perimeter security fence at least 2m in height shall be constructed from appropriate materials; and
5. Provision and installation in all buildings of firefighting equipment and portable fire extinguishers.

Maintenance of Camp Facilities

The following measures shall be implemented to ensure that the construction camp and its facilities will be organized and maintained to acceptable and appropriate standards:

1. A designated camp cafeteria shall be established under strict sanitary and hygiene conditions.
2. Designated meal times shall be established.
3. Cooking or preparation of food shall be prohibited in accommodation quarters;
4. Designated rest times shall be established.
5. Designated recreational hours shall be put in place.
6. Smoking shall be prohibited in the workplace.
7. Procedures shall be implemented to maintain the condition of the construction camp and facilities and ensure adequate cleanliness and hygiene.
8. The latrines and urinals shall be adequately lighted and shall be maintained in a clean sanitary condition at all times.
9. Water shall be provided in or near the latrines and urinals by storage in drums; and
10. A complaint register to receive and respond to complaints from the construction camp residents regarding facilities and services provided.

Code of Conduct

A major concern during a construction of a project is the potentially negative impacts of the workforce interactions with the local communities. For that reason, a Code of Conduct shall be established to outline the importance of appropriate behavior, drug and alcohol abuse, and compliance with relevant laws and regulations. Each employee shall be informed of The Code of Conduct and bound by it while in the employment of the Client or its Contractors. The Code of Conduct shall be available to local communities at the project information centers or other place easily accessible to the communities. The Code of Conduct shall address the following measures (but not limited to them):

1. All workers and subcontractors shall abide by the laws and regulations of Vietnam.
2. Illegal substances, weapons and firearms shall be prohibited.
3. Pornographic material and gambling shall be prohibited.
4. Fighting (physical or verbal) shall be prohibited.
5. Workers shall not be allowed to hunt, fish or trade in wild animals.
6. No consumption of bush meat shall be allowed in camp.
7. No pets shall be allowed in camp.
8. Creating nuisances and disturbances in or near communities shall be prohibited.
9. Disrespecting local customs and traditions shall be prohibited.
10. Smoking shall be prohibited in the workplace.
11. Maintenance of appropriate standards of dress and personal hygiene shall be in effect.
12. Maintenance of appropriate hygiene standards in accommodation quarters shall be set in place.

13. Residing camp workforce visiting the local communities shall behave in a manner consistent with the Code of Conduct; and
14. Failure to comply with the Code of Conduct, or the rules, regulations, and procedures implemented at the construction camp will result in disciplinary actions.

Construction Impact Management Plan

In order to reduce the impact of the construction activities on local communities and the environment, the Construction Contractor shall implement the following Sub-Plans in accordance with the following stipulations:

Erosion and Sedimentation

Site activities shall be carefully managed in order to avoid site erosion and sedimentation of downstream waterways. In order to minimize negative erosion impacts in the project area, the following activities shall be carried out by the Contractor:

1. Erosion and sedimentation shall be controlled during the construction. Areas of the site not disturbed by construction activities shall be maintained in their existing state.
2. Disturb as little ground area as possible, stabilize these areas as soon as possible, control drainage through the area, and trap sediment onsite. Install erosion control barriers around perimeter of cuts, disposal pits, and roadways.
3. Slope works and earth moving/excavation shall be conducted in order to minimize exposure of the soil surface both in terms of area and duration. Temporary soil erosion control and slope protection works shall be carried out in sequence to construction.
4. Conserve topsoil with its leaf litter and organic matter, and reapply this material to local disturbed areas to promote the growth of local native vegetation.
5. Apply local, native grass seed and mulch to barren erosive soil areas or closed construction surfaces.
6. Apply erosion control measures before the rainy season begins, preferably immediately following construction. Install erosion control measures as each construction site is completed.
7. In all construction sites, install sediment control structures where needed to slow or redirect runoff and trap sediment until vegetation is re-established. Sediment control structures include windrows of slash, rock berms, sediment catchment basins, straw bales, brush fences, and silt fences.
8. Control water flow through construction sites or disturbed areas with ditches, berms, check structures, live grass barriers, and rock.
9. The ground surface at the construction site offices shall be concreted or asphalted in order to minimize soil erosion.
10. Erosion control measures shall be maintained until vegetation is successfully re-established.
11. Water shall be sprayed as needed on dirt roads, cuts, fill material and stockpiled soil to reduce wind-induced erosion and dust.

Particulate Emissions and Dust

The Contractor shall propose methods and actions to control dust resulting from construction related activities, including quarry sites, crushing and concrete batching plants, earthworks

including road construction, embankment and channel construction, haulage of materials and construction work camps. In particular the Contractor shall undertake the following:

1. Minimize production of dust and particulate materials at all times, to avoid impacts on surrounding communities, and especially to vulnerable people (children, elderly people).
2. Time removal of vegetation to prevent large areas from becoming exposed to wind.
3. Place screens around construction areas to minimize dust proliferation, paying particular attention to areas close to local communities.
4. Spray water as needed on dirt roads, cut areas and soil stockpiles or fill material. Spraying shall be carried out in dry and windy days, at least twice a day (morning and afternoon). The frequency of spraying near local communities shall be increased as needed.
5. Pave access roads with gravel in the sections which near the communities and other sensitive receptors to reduce generation of air-borne dust.
6. Provide an adequate ventilation system and other measures to control concentration of air pollutants within tunnels.
7. Transportation of materials by vehicles and construction of access roads shall be properly designed. For example, the access road can be constructed and paved by concrete/asphalt, or laid with small graded rocks, prior to major earthworks which may require transportation of substantial amount of materials on-site and off-site.
8. Ensure adequate maintenance of all vehicles. Construction plant/vehicles that generate serious air pollution and those which are poorly maintained shall not be allowed on site.
9. Transport of chemicals or materials such as cement, sand and lime shall be covered entirely with clean impervious material to ensure that these materials shall be contained. Overflow of material shall be avoided; and
10. The exhaust gases from construction machinery and vehicles are accepted. However, the engines shall be inspected and adjusted as required to minimize pollution levels.

Noise

To minimize noise the Contractor shall:

1. Maintain all construction-related traffic on project access roads at established speed limits.
2. Maintain all on-site vehicle speeds at or below 30 kph, or otherwise designated.
3. To the extent possible, maintain noise levels associated with all machinery and equipment at or below 90db.
4. In sensitive areas (including residential neighborhoods, hospitals, rest homes, schools, etc.) more strict noise abatement measures may need to be implemented to prevent undesirable noise levels.
5. Apply proper measures to minimize disruptions from vibration or noise coming from construction activities.
6. Design a transportation schedule for entry of construction materials to minimize the adverse impact on residents, as well as the traffic on the existing roads. The transportation vehicles shall be required to slow down and banned from using horns when passing sensitive areas. Transportation during peak hours should be minimized. The Contractor shall provide the transportation route in advance to the Engineering Supervisor.

7. Maintain the construction equipment in its best operating conditions and lowest noise levels possible.
8. Use temporary noise barriers to minimize the noise caused by construction equipment;
9. Provide hearing protection to workers who must work with highly noisy machines such as piling, explosion, mixing, etc., for noise control and workers protection.
10. Areas for the storage of fuel or lubricants fenced and have a compacted/impervious floor or other surface to prevent the escape of accidental spillage of fuel and/or lubricants from the site. Surface water drainage from fenced areas shall be discharged through an oil skimmer or other appropriate device to remove hydrocarbons. Empty fuel or oil drums may not be stored on site. Proper MSDS labeling shall be in place and training provided to workers handling these materials.
11. The construction supervision team shall be equipped with portable noise detection devices to monitor the noise level at the sensitive receptors.
12. Materials leaving the construction site shall be transported during non-peak hours in order to minimize traffic noise due to the increase in traffic volumes.
13. Use of properly designed silencers, mufflers, acoustically dampened panels and acoustic sheds or shields, etc. shall be made. Mufflers and other noise control devices shall be repaired or replaced if defective.
14. Use of electric-powered equipment when applicable instead of diesel-powered or pneumatic-powered equipment.
15. Equipment known to emit a strong noise intensity in one direction, shall when possible, be oriented to direct noise away from nearby sensitive receptors.
16. Machines and equipment that may be in intermittent use shall be shut down between work periods or throttled down to a minimum operation.

Earthworks, Cut and Fill Slopes

The contractor shall ensure that the following procedures are undertaken:

1. All earthworks shall be properly controlled, especially during the rainy season.
2. The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.
3. The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation to avoid partially completed earthworks, especially during the rainy season.
4. In order to protect any cut or fill slopes from erosion, in accordance with drawings, cut off drains and toe-drains shall be provided at the top and bottom of slopes and be planted with grass or other plant cover. Cut off drains should be provided above high cuts to minimize water runoff and slope erosion.
5. Any excavated cut or unsuitable material shall be disposed of in designated disposal areas as agreed to by the Supervisory Engineer, and
6. Disposal sites should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause runoff from the landfill towards any watercourse. Drains may need to be dug within and around the landfills, as directed by the Supervisory Engineer.

Stockpiles and Borrow Pits

The Contractor shall prepare and overall Stockpiles and Borrow Pits Management Plan for the total works. Operation of a new borrowing area, on land, in a river, or in an existing area, shall be subject to prior approval of the Environmental Supervisor, and the operation shall cease if so instructed by the Supervisory Engineer.

Borrow pits shall be prohibited where they might interfere with the natural or designed drainage patterns. River locations shall be prohibited if they might undermine or damage riverbanks, or carry too much fine material downstream.

The location of crushing plants shall be subject to the approval of the Supervisory Engineer, and not be adjacent to environmentally sensitive areas, or to existing residential settlements, and shall be operated with approved fitted dust control devices.

Rock or gravel taken from a river shall be far enough removed to limit the depth of material removed to one-tenth of the width of the river at any one location, and not to disrupt the river flow, or damage or undermine the riverbanks.

The Plan shall include:

1. A map showing the extent of the area to be developed.
2. A method statement defining the proposed working methods.
3. The proposed access and haulage routes between the borrow pits and the destination for the extracted materials.
4. A justification for the quantities of materials to be extracted, an estimation of the waste material to be generated and disposal details for such waste materials.
5. Details of the measures taken to minimize the borrow pit areas and their visual impact on the surrounding area, and
6. Details of the measures to be taken for the long-term rehabilitation of the borrow pit areas in order to avoid situations that could constitute a threat to health and safety and cause environmental degradation.

In general terms, the Contractor shall:

1. Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies.
2. Limit extraction of material to approved and demarcated borrow pits.
3. Stockpile topsoil when first opening the borrow pit. After all usable borrow has been removed, the previously stockpiled topsoil should be spread back over the borrow area and graded to a smooth, uniform surface, and adequately sloped for drainage. On steep slopes, benches or terraces may have to be established to help control erosion.
4. Excess overburden should be stabilized and re-vegetated. Where appropriate, organic debris and overburden should be spread over the disturbed site to promote re-vegetation. Natural re-vegetation is preferred to the best extent practicable.
5. Existing drainage channels in areas affected by the operation should be kept free of overburden.
6. Once the job is completed, all construction -generated debris should be removed from the site to an approved disposal location.

7. The Contractor shall ensure that all borrow pits used are left in an appropriate condition with stable side slopes, re-establishment of vegetation, restoration of natural water courses, avoidance of flooding of the excavated areas wherever possible so no stagnant water bodies are created which could breed mosquitoes, and
8. When the borrow pits or the local depressions created by the construction activities cannot be refilled or reasonably drained, the Contractor shall consult with the local community to determine their preference for reuse such as fish farming or other community purposes.

Disposal of Construction Waste

The Contractor shall carry out the following activities:

1. Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris.
2. Debris generated due to the dismantling of the existing structures shall be suitably reused, to the best extent feasible (e.g. as fill materials for embankments). The disposal of remaining debris shall be carried out only at sites identified and approved by the Supervisory Engineer. The Contractor should ensure that these sites (a) are not located within designated forest areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the Contractor dispose of any material in environmentally sensitive areas.
3. In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state to the satisfaction of Supervisory Engineer.
4. All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary, will be considered incidental to the work and should be planned and implemented by the contractor as approved and directed by the Supervisory Engineer.
5. Consult with local communities, if any, living close to spoil disposal sites that may be affected. The consultation shall provide local stakeholders with detailed information of the potential spoil disposal site, and provide an opportunity for them to express their opinions and concerns with the proposed plans. Information and feedback from the consultation process shall be incorporated into the final design for each spoil disposal site.
6. Include provisions for incorporating the most appropriate stabilization techniques for each disposal site.
7. Assess risk of any potential impact regarding leaching of spoil material on surface water.
8. Include an appropriate analysis to determine that the selected spoil disposal sites do not cause unwanted surface drainage, and
9. Stabilize spoil disposal sites to avoid erosion in accordance with the requirements of the Landscape and Re-vegetation Plan.

Demolition of Existing Infrastructure

The Contractor shall implement adequate measures during demolition of existing infrastructure to protect workers and public from falling debris and flying objects. Among these measures, the Contractor shall:

1. Set aside a designated and restricted waste drop or discharge zones, and/or a chute for safe movement of wastes from upper to lower levels.
2. Conduct sawing, cutting, grinding, sanding, chipping or chiseling with proper guards and anchoring as applicable.
3. Maintain clear traffic ways to avoid driving of heavy equipment over loose scrap.
4. Use of temporary fall protection measures in scaffolds and out edges of elevated work surfaces, such as hand rails and toe boards to prevent materials from being dislodged.
5. Evacuate all work areas during blasting operations, and use blast mats or other means of deflection to minimize fly rock or ejection of demolition debris if work is conducted in proximity to people or structures.
6. Provide all workers with safety glasses with side shields, face shields, hard hats, and safety shoes.

Other Management Plans

The contractor shall be responsible for preparing the following management plans in accordance with the stipulated terms of reference:

Waste Management Plan

During the construction stage, the Contractor shall prepare a Waste Management Plan before commencement of project works. The Plan shall include:

Water and Wastewater

- A review of the preliminary site drainage design prepared during the detailed design.
- An update of the preliminary design based on the actual construction program and site specific conditions (e.g. the geographical conditions, location of slopes and the nature of construction work).
- Detailed design including drawings, location maps, specifications of drainage collection channels and wastewater treatment facilities.
- Proposed discharge locations and treatment standards.
- A detailed implementation program of the proposed drainage system.
- As part of the design of the site drainage system, surface runoff within the construction site shall be diverted in order to avoid flushing away soil material and the water is treated by device such as sediment trap before discharge.
- Domestic sewage from site offices, toilets and kitchen shall either be collected by a licensed waste collector or treated by on-site treatment facilities. Discharge of treated wastewater must comply with the discharge limits according to Vietnamese legislation.
- A Wastewater treatment device such as a sediment tank can be installed near each of the constructions activities that may generate wastewater. Alternatively, sedimentation ponds can be constructed on-site to settle out excessive suspended solids (SS) before discharging into a discharge outlet.
- Retaining walls and sandbags barriers shall be constructed surrounding the bored piling machine in order to trap bentonite and wastewater within the piling location. The collected spent bentonite or the wastewater shall be pumped for treatment before discharge.

- Prior to the rainy season, all exposed surfaces and slopes shall be properly covered or landscaping shall be provided to minimize run-off of sediment laden. Slope protection can be carried out in sequence to construction and in advance of the rainy season.
- Drainage control devices such as sediment traps shall be installed at each discharge outlet, and they shall be cleaned regularly, and
- Chemical toilets can be provided on each work site employing 5 workers or more.
- At least one toilet shall be installed per 25 workers. Domestic sewage collected from the site office and chemical toilets shall be cleaned up on regular basis. Only licensed waste collectors shall be employed for this disposal. The sludge shall be treated according to the requirements of the Contractor's Waste Management Plan.

Solid Wastes

Waste such as those listed below are expected due to construction activities:

- Surplus excavated materials requiring disposal due to earth moving activities and slope cutting.
- Disposal of used lumber for trenching works, scaffolding steel material, site hoarding, packaging materials, containers of fuel, lubricant and paint.
- Waste generated by demolition of existing houses / buildings affected by the project or breaking of existing concrete surfaces.
- Waste from on-site wastewater treatment facility (e.g. treatment of bentonite from tunneling works by sedimentation process), and
- Domestic waste generated by construction workers, construction campsite and other facilities.

The above wastes must be properly controlled through the implementation of the following measures:

- Minimize the production of waste that must be treated or eliminated.
- Identify and classify the type of waste generated. If hazardous or chemical wastes are generated, proper procedures must be taken regarding their storage, collection, transportation and disposal. (See Emergency Plan for Hazardous Materials and Chemical Waste Management Plan).
- Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each, and
- Control placement of all construction waste (including earth cuts) to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands). Collect and recycle and dispose where necessary in authorized areas all of garbage, metals, used oils, and excess material generated during construction, incorporating recycling systems and the separation of materials.

The Contractor shall make a commitment to waste recycling and re-use methods in consideration of the following;

- A method statement on waste recycling, re-use and minimization of waste generation.
- Excavated material shall be re-used on-site or the nearby road segment / other projects as far as possible in order to minimize the quantity of material to be disposed of.

- Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc. shall be collected and separated on-site from other waste sources. Collected recyclable material shall be re-used for other projects or sold to waste collector for recycling, and
- Collected waste shall be disposed of properly through a licensed waste collector.

Pollution Prevention Plan

Emergency Plan for Hazardous Materials

If the construction site is expected to have or suspected of having hazardous materials (chemicals, asbestos, hydrocarbons, or other similar hazardous materials), the Contractor will be required to prepare a Hazardous Waste Management Plan and Emergency Response Plan to be approved by the Environmental Supervisor. Removal and disposal of existing hazardous wastes in project sites should only be performed by specially trained personnel following national or provincial requirements, or internationally recognized procedures.

The Contractor shall:

- Make the Hazardous Waste Management Plan available to all persons involved in operations and transport activities.
- Hazardous waste (or chemical waste) shall be properly stored, handled and disposed of in accordance with the local legislative requirements. Hazardous waste shall be stored at designed location and warning signs shall be posted.
- Inform the Environmental Supervisor, or Construction Supervisor of any accidental spill or incident in accordance with the plan.
- Prepare a companion Emergency Response Plan outlining all procedures to be undertaken in the event of a spilled or unplanned release.
- Initiate a remedial action following any spill or incident; and
- Provide a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions. The Emergency Plan for Hazardous Materials shall be subsequently updated and submitted to the PEO for no objection.

Chemical Waste

During construction there will be a potential for pollution to adjacent habitat areas and watercourses caused by chemical wastes such as spent waste oil, spent lubricant, contaminated soil material due to leakage of hydraulic oil, fuel from construction plant or vehicles, etc. The following measures shall be put into place in order to minimize the damage caused by chemical waste:

- All refueling of heavy equipment and machinery shall be undertaken by a service vehicle to prevent any spillage or contamination by chemical wastes such as maintenance oils, lubricants, etc.
- All the fuel and hazardous material storage shall be adequately enclosed to prevent any spillage problems.
- Storm water runoff from open workshops, repair areas, and enclosed storage areas shall be collected and treated in hydrocarbon separation pits/tanks before discharge to drains and waterways.

- All explosives shall be transported, stored and handled in accordance with applicable laws and good design engineering and constructions practices. The contractor shall provide details of proposed storage and security arrangements.

Maintenance of Construction Equipment

The Contractor shall:

- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands). Fuel storage shall be located in proper areas and approved by the PEO.
- Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems, and
- All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 100m from all cross drainage structures and important water bodies or as directed by the PEO.

Vegetation Clearing and Salvage

Clearing of Construction Areas

Areas proposed for clearing shall be included in the Vegetation Clearing and Salvage Plan. Only those proposed areas shall be cleared in accordance with the Plan and approved by the Engineering Supervisor. The Vegetation Clearing and Salvage Plan shall consider the existing usage of the project land to allow its existing usage to continue as long as is practicable, without interference with the Contractor's activities. Vegetation shall not be disturbed in those areas not submitted with the Plan.

The Contractor shall also arrange to coordinate with local communities as part of the Livelihoods Development Plan to clear the reservoir area.

The following measures shall be implemented:

- Large or significant trees in camp areas and access roads should be preserved wherever possible.
- The application of chemicals for vegetation clearing shall be minimized. To the best extent possible, non-residual chemicals shall be selected and with negligible adverse effects on human health.
- Herbicides use in the project shall be shown to be effective against the target vegetation species, have minimum effect on the natural environment, and be demonstrated to be safe for inhabitants and domestic animals in the treated areas, as well for personnel applying them.
- The design of roads, including temporary and permanent access roads shall avoid crop areas where reasonable and practical.

Landscape, Visual impacts and Re-vegetation

The construction program of the project shall be executed in phases, particularly in those locations where severe or high landscape and visual impacts are expected.

The following measures shall be implemented:

- Construction shall be programmed in sequence so that the scale of earth moving activities and area of exposed surface can be minimized.
- Re-vegetation shall start at the earliest opportunity. Appropriate local species of vegetation shall be used.
- The requirement of compensatory planting shall be included in the design and project contract. A Master Landscaping Plan and requirements of ecological monitoring or survey during different stages of the project shall be prepared during the design stage that shall be implemented during the construction and maintained during operation.
- Facilities and structures shall be located according to the terrain and geographical features of the project site.
- Restoration, of cleared areas such as borrow pits no longer in use, disposal areas, construction roads, construction camp areas, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be accomplished using landscaping, adequate drainage and re-vegetation.
- Existing trees and plants within the construction boundaries shall be tagged to indicate whether the trees are to be retained transplanted or removed. Transplantation of existing trees affected by the project works shall be carried out prior to the commencement of construction.
- Excavations shall avoid damage to the root systems. Mitigation measures are also required to prevent damage to trunks and branches of trees.
- Temporary hoarding barriers shall be of a recessive visual appearance in both color and form.
- Upon completion of the construction, the affected areas shall be immediately restored to their original condition, including the re-creation of natural and rocky shoreline, footpath and re-establishment of disturbed vegetation.
- At the highly visually sensitive zones, construction may be scheduled where possible at the low tourist seasons.
- Construction trucks shall operate at night when possible and kept cleaned and covered when shipping bulk materials.
- Construction sites shall be surrounded with fence if located at the scenery zones to avoid direct visual sights of the construction sites.
- There shall not be construction camps in scenic areas.
- Random disposal of solid waste in scenic areas shall be strictly prohibited.
- All mixing stations and concrete batching plants shall not be located near rivers or in scenic areas. The stockpiles shall be located in hidden areas, and outside of the sight from tourists;
- Use the existing roads as access road if possible to minimize the need for new access roads which lead to damage existing landforms and vegetation.
- Land use for agricultural activity prior to use for construction activities shall be, as much as possible, restored to a state to allow the same agricultural activity to continue.
- Spoil heaps and excavated slopes shall be re-profiled to stable batters, and grassed to prevent erosion.

- Topsoil stripped from the work areas shall be used for landscaping works, and
- Watercourses, which have been temporarily diverted by the construction activities, shall be restored to their former flow paths.

Site Restoration

- At the completion of construction work, all construction camp facilities shall be dismantled and removed from the site and the whole site restored to a similar condition to that prior to the commencement of the works, or to a condition agreed to with local authorities and communities.
- Remedial actions that cannot be effectively carried out during construction shall be carried out on completion of the restoration works (and before issuance of the acceptance of completion of works).

Various activities to be carried out for site restoration are:

- The construction campsite shall be grassed and trees cut replaced with saplings of similar tree species.
- All affected areas shall be landscaped and any necessary remedial works shall be undertaken without delay, including grassing and reforestation.
- Water courses shall be cleared of debris and drains and culverts checked for clear flow paths.
- All sites shall be cleaned of debris and all excess materials properly disposed.
- Borrow pits shall be restored.
- Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas.
- Saplings planted shall be handed over to the community or the land owner for further maintenance and watering, and
- Soak pits and septic tanks shall be covered and effectively sealed off.

Safety during Construction

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

- Present details regarding maximum permissible vehicular speed on each section of road.
- Establish safe sight distance in both construction areas and construction camp sites;
- Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. All signs shall be in English and Vietnamese language and be constructed according to Vietnamese specifications.
- Estimate maximum concentration of traffic (number of vehicles/hour).
- Use selected routes to the project site, as agreed with the PEO, and appropriately sized vehicles suitable to the class of roads in the area, and restrict loads to prevent damage to local roads and bridges used for transportation purposes.

- Be held responsible for any damage caused to local roads and bridges due to the transportation of excessive loads, and shall be required to repair such damage to the approval of the PEO.
- Not use any vehicles, either on or off road with grossly excessive, exhaust or noise emissions. In any built up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.
- Maintain adequate traffic control measures throughout the duration of the Contract and such measures shall be subject to prior approval of the PEO.
- Carefully and clearly mark pedestrian-safe access routes.
- If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours.
- Maintain a supply for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction.
- Conduct safety training for construction workers prior to beginning work.
- Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots, etc.) for construction workers and enforce their use.
- Provide post Material Safety Data Sheets for each chemical present on the worksite.
- Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant.
- Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers.
- During heavy rains or emergencies of any kind, suspend all work; and
- Brace electrical and mechanical equipment to withstand seismic events during the construction.

Environmental Training for Construction Workers

During construction there will be a potential for workers to damage protected areas and waterways adjacent to camps and work areas. The Contractor shall prepare an Environmental Training Plan for all construction workers: the Plan shall address the following items:

- All Contractor's employees shall be required to comply with environmental protection procedures and they shall be able to provide evidence that they attended the training sessions detailed in the Plan.
- The Plan shall educate all construction workers on the following issues but not limited to them: fire arm possession, traffic regulations, illegal logging and collection of non-timber forestry products, non disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, health and safety issues, all prohibited activities, the Code of Conduct requirements and disciplinary procedures, and general information on the environment in which they will be working and living;
- Establishment of penalties for those who violate the rules; and

- Proposed methods for conducting the training program, which shall include formal training sessions, posters, data in newsletters, signs in construction and camp areas and ‘tool box’ meetings.

APPENDIX A9- CHANCE FIND PROCEDURES

The project works could impact sites of social, sacred, religious, or heritage value. “Chance find” procedures would apply when those sites are identified during the design phase or during the actual construction period.

Cultural property includes monuments, structures, works of art, or sites of significant points of view, and are defined as sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.

In the event of finding of properties of cultural value during construction, the following procedures for identification, protection from theft, and treatment of discovered artifacts should be followed and included in standard bidding document.

- Immediately stop the construction activities in the area of the chance find.
- Delineate the discovered site or area.
- Secure the site to prevent any damage or loss of removable objects.
- Notify the supervisory Engineer who in turn will notify the responsible local authorities.
- Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures.
- Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance), conservation, restoration and salvage.
- Implementation of the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry of Cultural, Sport and tourist.
- Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.
- The World Bank needs to be notified by PMU on the issues and actions taken.
- These procedures must be referred to as standard provisions in construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered.
- Relevant findings will be recorded in World Bank Supervision Reports and the overall effectiveness of the project’s cultural property mitigation, management, and activities will be assessed.

Appendix A10- SOME PICTURE OF CURRENT STATUS OF SUBPROJECT AREA

Some pictures of public consultation

Picture 1: Mr.Nguyen Huu Phuoc – Deputy Director of DARD enounced his ideals

Picture 2: Mr. Pham Ngoc Nam – Deputy Director of Binh Thuan Irrigation Companies enounced his ideals

Picture 3: Mrs.Le Thi Hoa- vice chairman of Thuan Hoa commune enounced her ideals

Picture 4: Mr. Le Thanh An -vice chairman of Ham Tri commune enounced his ideals

Picture 5: Mr.Thai Đuc Khiet - vice chairman of Ham Hiep commune enounced his ideals

Picture 6: Mr.Huynh Van Tien - vice chairman of Ham Hiep commune enounced his ideals

Picture 7: Mr.Tran Dang Thu - expert of ARD enounced his ideals

Picture 8: Mr.Nguyen Van Tam– Binh Thuan DONRE enounced his ideals

Picture 9: Mr. Nguyen Minh Duy –Department of Construction enounced his ideals

Picture 10: Mr. Vo Ngoc Hung - vice chairman of Phu Hai commune enounced his ideals

Picture 11: Public consultation at Thuan Hoa commune

Picture 12: Public consultation at Thuan Hoa commune

Picture 13: Public consultation at Ham Thang CPC offices

Picture 14: Public consultation at Ma Lam town

Picture 15: Public consultation at Ma Lam CPC offices - Ham Thuan Bac district

Picture 16: Public consultation at Ham Thang CPC offices – Ham Thuan Bac district

Picture 17: Public consultation at Ham Thang CPC offices

Picture 18: Public consultation at Phu Hai CPC offices – Phan Thiet city

Picture 19: Public consultation at Ham TriCPC offices– Ham Thuan Bac district

Picture 20: Public consultation at Phu Hai CPC offices – Phan Thiet city

Pictures of sampling, field surveying

Picture 21: Taking water in the end of Cai river –Phu Hai commune– Phan Thiet city

Picture 22: Taking water in canal (behind the power house of Quao reservoir)

Picture 23: Taking water in canal of Quao river

Picture 24: Taking water at Kim Long dam

Pictures of status of Quao reservoir subproject areas

Picture 25: the spillway of Quao reservoir

Picture 26: upstream slope of Quao reservoir

Picture 27: the service road of of Quao reservoir

Picture 28: downstream slope of Quao reservoir

Picture 29: part of Cai river through Phu Hai commune

Picture 30: part of Cai river through Ham Chinh commune

Picture 31: paddy field at Ma Lam town

Picture 32: paddy and dragon fruit field Ham Tri commune

APPENDIX B – SOCIAL

Appendix B1- Methodological note

Appendix B2- Public Health intervention Plan

Appendix B3 – Public consultation, participation and communication strategy

Appendix B4- Gender action plan

Appendix B5- Grievance redress mechanism

Appendix B6- Information disclosure, account ability and monitoring

APPENDIX B1 – METHODOLOGICAL NOTE

Sampling Frame

Field survey in provinces of the project, household survey combined with field observations and focus group discussions, key informant interviews with local leaders, representative of the AH group and displaced households. These activities aim to collect general information of socio-economic situation, socio-economic characteristics of people/locals of project area, as the basis to propose appropriate solutions for minimizing direct and indirect negative impacts of the project.

Household survey by quantitative questionnaires:

Based on list of affected people, local consultants will interview each household to collect information. Besides questions with available answers designed questions, open questions will collect more information, also serving for assessment and verification of information, consideration of assistance demand, livelihood restoration and risk when displacement.

Selection of survey sample for household interview

Quao reservoir has scope of impacts on 7 communes of Ham Thuan Bac districts as follows.

Commune	Natural area (ha)	Population (person)	No. of HH
Thuan Hoa	10549	6,319	1,538
Ham Tri	6532.7	8,859	2,091
Ma Lam	1696.9	14,124	3,272
Ham Chinh	4543	14,763	3,426
Ham Thang	1820.9	18,598	4,647
Phu Long	2550	16,950	4,120
Phu Hai	12123	13,637	3,006
Total	**39815.5**	**93,250**	**22,100**

(Source: Statistical data in 2013)

According to the guidance of sampling and scope of study from the Central Social Consultants, the consultants of sub-project conducted screening social impacts, local consultation and sampling survey of 151 HHs including 18 affected HHs (household survey combined with inventory of loss) and 133 other benefited households and affected by flood discharge (socio-economic survey), 73 HHs in Ham Tri commune and 60 HHs in Thuan Hoa commune. Out of 18 affected households, 10 are displaced HHs and 8 HHs are affected productive land.

- ***Key informant interview***

Composition interviewed includes:

Members of PMUs, compensation committee of city, town and district;

Local authorities;

Officers of local unions;

Representatives of affected households, direct and indirect beneficiary

- ***Focus group discussion***

Consultants will work with local leaders, and sub-projects to plan group discussion. Each group has from 5 to 8 people. People interviewed are selected from households with the following criteria: AHs (direct, indirect), woman householders, and difficulty households (the elderly, disability households, policy households ...).

- ***Field observation***

Consultants will visit in the field, taking pictures and talking with people, to clarify results of in-depth interviews, group discussions as evidence for assessment results.

Object	**Key informant interview**	**Focus group discussion**	**Consultation**
AHs (direct or indirect)	03	02	
Displacement households (if any)	03		
Ethnic minorities (if any)	04	02	
Project management and operation staffs	02		
Local leaders	03		
Polotial and social associations		02	
Staffs in charge of irrigation at commune level	02		
Administration agencies on agriculture and irrigation of the locals (Departments)	01		01
Others (health care agencies, communication agencies, etc.)	18	06	01
Total	**03**	**02**	

(With gender composition of AHs interviewed and need to have participation of severely AHs, ethnic minorities, disadvantaged people, ...)

1.1. Qualitative survey results

Table 1. Gender of householder

Gender	**Ratio (%)**	**No. of person**
Male	84,2	112
Female	15,8	21

Table 2. Persons divided by hamlet

Hamlet	**Ratio (%)**	**No. of person**
Lam Giang	29,3	39

Phu Thai	21,1	28
Phu Hoa	4,5	6
Dan Tri	23,3	31
Dan Hoa	9,0	12
Dan Le	2,3	3
Dan Hiep	10,5	14

Table 3. Persons divided by communes

Commune	Ratio (%)	No. of person
Ham Tri	54,9	73
Thuan Hoa	45,5	60

Table 4. Person per household

No. of person	Ratio (%)
1	0,8
2	6,8
3	9,8
4	29,3
5	30,1
6	9,8
7	2,3
8	7,5
9	2,3
10	1,5

Table 5. Occupation of household members

Occupation	Ratio (%)
Laborless	2,0
Agriculture, forestry & fishery	45,0

Business, service	1,6
Employee of state	4,3
Student	12,8
Worker	5,9
Housework	1,6
Retirement	0,4
Short-term employee	2,6
Jobless	0,9

Table 6. Education of HH members

Education	Ratio (%)
Illiterate	10,8
Primary school	38,8
Secondary school	21,8
High School	13,5
Vocational school	1,1
College/ university	4,9
Not yet school	8,3

Table 7. Housing type

Type	Ratio (%)	House
Permanent house	0,8	1
Semi-Permanent house	96,2	128
Wood house	3,0	4

Table 8. LURC

LURC availability	Productive land	Residential land
Yes	93,2	83,5
No	6,8	16,5

Table 9. Water use

Water sources	Water use		
	Drinking	Washing	Production
River	0,8	4,5	10,5
Reservoir	2,3	3,0	22,6
Bore hole	65,9	82,0	17,3
Water supply plant	19,7	6,0	41,4
Irrigation system	3,0	3,8	7,5
Rain water	8,3	0,8	0,8

Table 10. Toilet types

Toilet types	Ratio (%)	Toilet
No toilet	0,8	1
Septic toilet	72,9	97
Two-compartment	15,8	21
Simple toilet	9,8	13
Water surface toilet	0,8	1

Table 11. Living condition

Living condition	Ratio (%)	HH
Wealthy	12,0	16
Medium	65,4	87
Needy	16,5	22
Poor	6,0	8

Table 12. School dropout children

School dropout children	Ratio (%)	No. of children
Yes	18,0	24
No	82,0	109

Table 13. Reason of school dropout

Reason	Male (%)	Female (%)
Economic difficulties	27,3	15,8
Production	13,6	10,5
Not interested	40,9	15,8
Low learning capacity	22,7	
Difficult traveling	-	5,3
No need high education	-	

Table 14. Common sickness

Common sickness	Ratio (%)	No. of person
Flu	49,0	24
Respiratory	12,2	6
Cold fever	-	
Malaria	2,0	1
Liver	2,0	1
Poison	-	
Injury	4,1	2

Table 15. Health insurance

Health insurance	Ratio (%)	No. of person
Yes	83,5	111
No	15,8	21

Table 16. Loan sources

Loan sources	Ratio (%)	HH
Friends	2,2	2
Lender	3,2	3
Credit fund	9,8	9
Social policy bank	66,7	62

Other banks	2,2	2
Program	2,2	2
Poverty fund	-	
Associations	4,3	4

Table 17. Number of households benefited by the project

No.	Commune	Population, ethnic minorities					Poverty ratio (%)	No. of benefited households
		Population (person)	No. of HH	EM and ratio	No. of EM	Ratio of agri-culture HHs (%)		
1	Thuan Hoa	5482	1429	13.63	747	87.74	8.66	1211
2	Ham Tri	8677	2081	25.63	2224	89.57	3.31	1864
3	Ham Phu	8482	2011	11.84	1004	94.16	4.57	1894
4	Ma Lam	14630	3588	10.12	1481	62.07	2.14	2227
5	Ham Chinh	14398	3523	0.15	22	84.76	3.54	2989
6	Ham Liem	11297	3048	0.18	20	75.39	2.98	2298
7	Hong Liem	10093	3347	0.31	31	89.82	3.44	2108
8	Ham Thang	19153	4646	0	0	53.94	1.91	2506

APPENDIX B2 - PUBLIC HEALTH MANAGEMENT PLAN

1. The necessity of the construction of puplic health management plan

The activities of the subproject will generate impacts on the surroundings quality: air, water and soil environment, in addition it may arise disease. All these factors will affect directly 40 workers, the entire population around the project area (45 households) and households along the transport route (80 households). The consequence of these effects lead to increase occupational accidents, traffic accidents, diseases related to respiratory and intestinal system and eyes.

There are 125 households and 40 workers will directly contact with sources of pollution and disease from the activities of the project, although subproject have had measures to limit pollution such as dust, emissions, wastewater and epidemics, but there are potential impacts that we do not see immediately, so need to take measures for early detection of disease and sources of disease. The plan indicates the measures to minimize and prevent those impacts.

2. Objective

To control and prevent diseases, raise awareness of the people and the workers to protect health yourself; help people access fully medical services. Organize regularly medical examination to detect early disease due to impacts of the subproject; to build treatment plans for incidents related to diseases, occupational accidents and traffic.

3. Measure and content of public health management

- To train and raise awareness, prevent impacts on health
- Organize regularly medical examination for workers and people in the subproject region
- Build plan to minimize the impact on public health
- Build plan to prevent and treat diseases

4. Role and responsibility of agencies, organizations and individuals

Department of Agriculture and Rural Development (DARD)/ Project Management Unit (PMU):

- DARD and PMU are responsible for building materials about public health safety training.
- Coordinate all levels of authorities in Thuan Hoa and Ham Tri commune (local authorities, Fatherland Front, Women's Union, Farmers' Union, Youth Union, hamlet representative) organize propagandic activities about health safety.

Department of Health, Ham Thuan Bac Preventive Medicine Center

- To train and raise awareness for all basic levels, contractors and residents about prevention measures and treatments of diseases;
- Check the medical examination process;
- To direct promptly when epidemics appear, resolving incidents related to public health.

People's Committee, Social Organizations

- To direct, guide and organize the health safety work; to coordinate closely with contractor, Department of Health and Preventive Medicine Center when epidemics appear.

Health Station: To pPrepare the medical examination plan and guide water pollution treatment, epidemic prevention and treatment.

5. Implementation Schedule

Public Health Management Plan implemented at 3 stages of the subproject and extended 6 months at operation stage.

Table B2-1 Implementation Schedule of "Public Health Management Plan"

No	Measure	Content	Responsible unit	Cost	Time
1	To train and raise awareness, prevent impacts on health	- Identify the impact of air and water environment, food safety. - Preventable measures (using a comforter when entering the affected area, treat water pollution by alum and chloramine B) - Cleaning household sector, ranch house	- Department of Agriculture and Rural Development (DARD) - Project Management Unit (PMU) - Ham Thuan Bac Preventive Medicine Center - Health Station at Thuan Hoa and Ham Tri commune - Contractor	15.000.000 millions	2 stages in the early and the mid-stage of the project
2	- Organize regularly medical examination for workers and people in the subproject region	- Check the health of workers 3 months/ time, residents in the affected areas 6 months / time - The diseases related to respiratory system, intestinal tract, eyes - To consult the affected people during examination - Advise or handle when the detection of abnormalities related to the impact of subproject (timely notify to the authorities and functional units)	- Department of Agriculture and Rural Development (DARD) - Project Management Unit (PMU) - Ham Thuan Bac district Preventive Medicine Center - Health Station at commune/ ward - Contractor	Budget of Ham Thuan Bac district	3 months/ time from the start of construction to 6^{th} month
3	Build plan to minimize the	- Medical staffs at commune/ ward	- Department of Agriculture	Budget of Ham Thuan	Continuously during the

No	Measure	Content	Responsible unit	Cost	Time
	impact on public health	monitor regularly the implementation of the mitigation measures of construction units. - To treat timely occupational accidents and traffic - To vaccinate completely children, pregnant woman	and Rural Development - Project Management Unit (PMU) - Ham Thuan Bac district Preventive Medicine Center - Health Station at commune/ ward - Contractor - Women's Union - Fatherland Front	Bac district and contractor	construction time
4	Build plan to prevent and treat epidemic	- To spray fly and mosquito- spray in the project area with the frequency of 3 months/ time. - To guide the water sanitation; use chloramine B for pretreatment of wastewater on work site and households. - When appearing epidemic, we need localize epidemic, isolate infectious objects and spray chloramine B to disinfect.	- Department of Agriculture and Rural Development (DARD) - Project Management Unit (PMU) - Ham Thuan Bac district Preventive Medicine Center - Health Station at commune/ ward - Contractor - Women's Union - Fatherland Front	Budget of Binh Thuan province (Department of Health) and contractor	Continuously during the construction time (18 months)

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APPENDIX B3: PUBLIC CONSULTATION, PARTICIPATION AND COMMUNITCATION STRATEGY

1. The necessity of the construction of communication plan

The communication and public consultation plan is done throughout from the establishment of the investment project to the project operation. This helps local communities and managers to understand and visualize the entire impacts (positive, negative) to provide mitigation measures the impact on the natural environment and society, especially vulnerable objects include children, the elderly, women and sensitive ecosystem.

Information from communication and public consultation plan help managers, local authorities, monitoring unit to give decisions quickly or change timely decisions or plans during the project implementation.

2. Objective

To publish information about sub-project and provide all materials on the action plan to government at various levels, social organizations, unions and resident in sub-project areas. To consult local communities and organizations for the plan will be made for each stage of the project. The feedback helps the investors and the management level to improve plans to meet practical needs prior to the implementation of the action plan.

3. Contents

- Information on the subproject and policies of interest will be disseminated to people by Project Management Unit (PMU);
- Environmental and Social Management Plan: (i) the PMU and consultancy units provide information of impacts and mitigation measures; (ii) To consult the local authorities and social organizations, unions, people around the project area.
- Resettlement Action Plan: Provides information about land acquisition, resettlement, compensation cost apply framework and support policies of the subproject and the provisions of Binh ThuanProvince and government at various levels, affected people
- Gender Action Plan: provides information about gender equality for the local authorities and social organizations, unions, people around the project area.
- Public Health Management Plan: provides information on the solutions, disease prevention plan, medical examination periodically.
- Social security, traffic safety, social evils: provide information about law, legal education for workers, people around the subproject area.
- Dam Safety: disseminate plans when occurring dam safety incidents in the construction process and the rainy season.
- Operate mining and flood discharge: provide information and detailed plans for the flood discharge to people around the project area and downstream area; make protection plan for the people, the buildings in downstream of the dam.

4. Forms of communication, community consultation

In order to organize the effective communication activities, need understand the basic elements of the communication process and public relations of them.

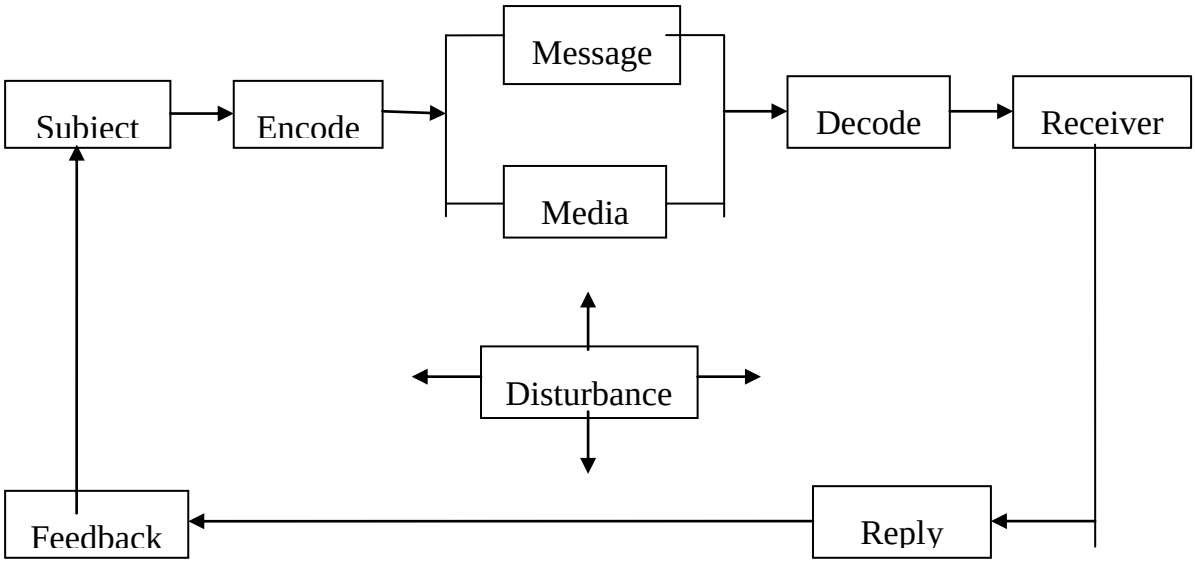

Diagram B3-1: The elements of the communication process

- Organize meetings to disseminate information for local authorities, social organizations, unions, people of the subproject region (Thuan Hoa and Ham Tri commune;
- Through the mass media, basis loudspeakers, commune and village boards.
- Issue brochures, consultative questionnaires to local authorities, unions, people of the subproject area;
- Through the activities of organizations and clubs;
- Training;
- Other media and information forms.

5. Role and responsibility of agencies, organizations and individuals

Department of Agriculture and Rural Development represents Binh Thuanprovince people's committee is an investor, and Project Management Unit for investment and construction in Agriculture and Rural development of Binh Thuanprovince is the project implementation unit.

Department of Agriculture and Rural Development (DARD)/ Project Management Unit (PMU):

- DARD and PMU are responsible for building materials about communication plan and participatory public consultation.
- Coordinate government at various levels in Thuan Hoa and Ham Tri commune (local authorities, Fatherland Front, Women's Union, Farmers' Union, Youth Union, hamlet representative) organize propaganda activities for this plan.

People's Committee, Social Organizations

- To direct, guide and organize the propaganda activities and disseminate contents of communication, participatory public consultation.
- Direct news agencies, local propaganda agencies to spend the appropriate time for disseminating plans and the impact of the subproject.

Land Clearance Committee

- Provide information about land acquisition, resettlement, compensation cost apply framework and support policies of the subproject and the provisions of Binh ThuanProvince and government at various levels, the affected people.

Health Station: disseminate information on the disease prevention plan, medical examination periodically, solutions when having epidemic.

6. Implementation Schedule

The communication plan and participatory public consultation implemented under stages of the subproject; to provide completely information for local people and government at various levels.

Table B3-1 Implementation Schedule of "Communication Plan, Consultation with Community Participation"

No	*Stage*	*Content*	*Form*	*Responsible unit*	*Receptive unit*	*Note*
1	**Preparation**	Disseminate information, consult the authorities about subproject: scale, type of investment, the main works, incidence, benefits of the subproject.	Organize meeting at government at various levels, mass organizations.	DARD and PMU	Binh ThuanProvince People's Committee, Department of Planning and Investment, Department of Finance, Department of Natural Resources and Environment, Ham Thuan Bac People's Committee, Government of Thuan Hoa and Ham Tri commune	
		Disseminate information about policies, compensation plan, the draft of resettlement action plan.	Meetings, leaflets, consultation votes at all government levels, the affected households around the subproject area.	PMU coordinate with design consultancy unit, resettlement action plan consultancy unit.	Ham Thuan BacPeople's Committee, Thuan Hoa and Ham Tri commune, Women's Union, Fatherland Front, Farmers' Union, Cadastral Division of commune, 133 households in the project area.	Perform 2 times: to prepare and present a draft of resettlement action plan
		Disseminate information about project, present the	Meetings, leaflets, consultation votes at all	PMU coordinate with design	Ham Thuan Bac People's Committee,	Perform 2 times: to

No	*Stage*	*Content*	*Form*	*Responsible unit*	*Receptive unit*	*Note*
		draft of ESIA and ESMP reports, gender plan, public health, communication, etc.	government levels, the affected households around the subproject area	consultancy unit, ESIA consultancy unit	Thuan Hoa and Ham Tricommune, Women's Union, Fatherland Front, Farmers' Union, Cadastral Division of commune/ precinct, 133 households in the project area.	prepare and present a draft of resettlement action plan.
		Compensation and resettlement	Organize meetings to disseminate information about measure, counting, compensation plan, post information in noticeboard of commune/ precinct and village/ urban groups.	PMU coordinate with Compensation, Assistance and Resettlement Board	Thuan Hoa and Ham Tricommune People's Committee, Women's Union, Fatherland Front, Farmers' Union, Cadastral Division of commune and 18 affected households.	Implement according to Resettlement Action Plan report.
No	**Stage**	**Content**	**Form**	**Responsible unit**	**Receptive unit**	**Note**
2	**Construction and Operation**	Gender Action Plan Public Health Management Plan Social Management Plan	Meetings, leaflets, basic broadcasting, consultation	PMU and Social Supervising Consultant	Thuan Hoa and Ham Tri commune People's Committee, Women's Union, Fatherland Front, Farmers' Union, Cadastral Division of commune and 133 affected	Implement in 3 phases of the subproject.

No	*Stage*	*Content*	*Form*	*Responsible unit*	*Receptive unit*	*Note*
			votes at government at various levels, the affected households around the subproject area		households.	
		Environmental Management Plan		PMU and Environmental Supervising Consultant	DONRE, Thuan Hoa and Ham Tri commune People's Committee, Women's Union, Fatherland Front, Farmers' Union, Health Station, Cadastral Division of commune/ precinct and 133 affected households.	Implement in 3 phases of the subproject
		Public order and social evils		PMU and contractor	Thuan Hoa and Ham Tri commune People's Committee, Women's Union, Fatherland Front, Farmers' Union, Health Station, Cadastral Division and Police of commune.	
		Traffic Safety and Fire Prevention and Extinction				Construction Stage.

Monitoring Assessment: PMU make a monitoring report of communication plan and participatory public consultation to control communication content, synthesize feedback from the Supervising Consultant Unit, local government, social organizations, unions and citizens to supplement or amend policies and measures of the management plan to suit each stage of the subproject.

Implementation Cost

The implementation cost of this plan is integrated with other plans (communication content and methods will be acquired and build by other plans. Social Management Plan chairs other plans related to social issue. Cost of this phase focuses primarily for broadcasting and organizations, the expected cost is 100,000 million (fifty million VND) in 24 months.

Appendix B4 - GENDER ACTION PLAN

1. Principles of gender action plan

- Project opportunities and equal sharing of benefits between women and men;
- Systematic measures aimed at reducing gender inequalities in the project area in the activities related to dam safety improvement;
- Approach with poor women;
- Collect data on gender analysis including monitoring and evaluation designed by stakeholders;
- Create favorable environment to support the capacity building and the participation of women at all the operational phase of the project on gender beside ethnic minorities development plan;
- Promote presence of women in decision-making bodies at all levels.

2. Base for building gender action plan

- The legal documents of Vietnam and the donor's policies;
- Results of gender analysis in the locality of the project;
- The specific activities in the implementation of project components.

3. Outputs

- Raising awareness on gender for local government leaders and the local population;
- Raising awareness of local people, including women and men about the positive and negative impacts of project;
- Ensure the involvement of women (at least 30%) in the community's supervisor group;
- Ensure the involvement of women (at least 30%) in the consultation activities of the project;
- Ensuring the participation of women, men in the locality in the communication activities in order to minimize the negative impact of the project;
- Ensuring equality of access, benefit for women and men in the community for programs to reduce the adverse impact on health during project execution;
- Ensuring equality of access, benefit for women and men in livelihood support programs, especially among single women, poor women, women from ethnic minorities.

4. Gender action plan

Action	Goal	Responsibility	Time
Component 1: **Dam Safety Rehabilitation**			
(i) Detailed design, supervision and quality control of rehabilitation works for prioritized dams and associated	- Project information is announced publicly for the local people, including detailed design drawings construction site, construction time. It should ensure that the information to	PMU/ project coordinators are responsible that these terms will be specified in the contract; commune officials will submit	During construction

Action	Goal	Responsibility	Time
infrastructure	women and vulnerable groups; - Establishment of community's supervisors, which ensures that at least 30% of members are women; - Organize training on community supervision in the implementation of irrigation projects for the community's supervisors - Organize propaganda, training, raising awareness to the people about the risks that may occur during project construction, ensure minimum 30% of women involved in training.	contractors a list of people who want to work for the project; CPC officers are responsible for ensuring the achievement of its objectives; Women's Union is responsible for ensuring ratio of women involved in activities.	
(ii) Rehabilitation works, including civil works, hydro-mechanical works and installation of hydrological and safety monitoring equipment	- The contractors will have priority use of unskilled labor (through subcontracting); must be at least 30% of the total labor force is local unskilled labor; - Give priority to women workers in the 30% of local labor; men and women labor will receive the same wages for the same type of work; - The contractor must not employ child labor; - People want to work for the project will write their names in the list of villages. Head of the village and commune officials will provide this list to the contractor, the contractor will select on a priority basis of poor and vulnerable households, women and ethnic minorities.	PMU/ project coordinators are responsible that these terms will be specified in the contract; commune officials will submit contractors a list of people who want to work for the project; CPC officers are responsible for ensuring the achievement of its objectives; Women's Union is responsible for ensuring that women are employed in accordance with their expectations.	During construction
(iii) Preparation of Operation and Maintenance Plans and Emergency Preparedness Plans	- Consultations with local communities are held before, during and after the establishment of the plan, ensuring that at least 30% of women involved in the consultation process; - Vulnerable groups, single women should be listed in the plan and ensure the minimum of	PMU/ project coordinators are responsible that these terms will be specified in the contract; commune officials will submit contractors a list of people who want to	During construction

Action	Goal	Responsibility	Time
	risk in the operation against them.	work for the project; CPC officers are responsible for ensuring the achievement of its objectives; Women's Union is responsible for reviewing plans to ensure mitigation of risks for vulnerable people.	
(iv) Adoption of standardized checklist for community-managed dams	- Ensure at least 30% of women in the project management unit at the grassroots level and in the community;	CPC officers are responsible for ensuring the achievement of its objectives; Women's Union is responsible for ensuring women in the project management unit.	During construction
Component 2: **Project Management Support**			
Capacity development, integrated dam operation plan in the basin, emergency preparedness plan including dam break analysis, mapping flood in the downstream and set of benchmarks, raising awareness and evacuation training for local communities in the downstream.	- Prepare diagram and list of households affected by the dam operation, which should mark the protection of ethnic minorities, single women, the elderly and children; - Training, awareness raising and risk prevention training organization, emergency response for local communities in the downstream, which should ensure that at least 50% of women involved in training and communication.	PMU / project coordinators are responsible for ensuring that these terms will be specified in the contract; At the same time ensuring the implementation of activities; CPC officers and Women Unions are responsible for ensuring the achievement of its objectives;	During construction
Component 3: **Project Management**	- Organize training activities in order to increase gender awareness for the project	PMU, contractors and project consultants cooperate to	During construction

Action	Goal	Responsibility	Time
Support	management unit at all levels; local leaders; community workers; local people.	implement	
***Component 4:* Disaster Contingency**	Organize training on measures to reduce disaster risk for project management units at all levels, local government, community workers and local people, to ensure a minimum of 30% women involved in the training.	PMU, contractors and project consultants cooperate to implement	During construction

5. Monitoring and evaluation

4.5.1. Principles

- Because number of affected household in the subproject is small, the PPMU and CPMU will be responsible for monitoring activities (internal monitoring and progress report).
- The subproject will ensure full of data with gender aggregated and a monitoring plan will be proposed and implemented to measure forecasted risks in order to confirm benefits of women through the capacity building programs.
- CPMU and PPMU with support by gender specialists will establish management system and implement effectively. This system will provide information of some indicators to demonstrate relevant mitigation of social risks in the subproject implementation.
- The monitoring activities will be carried out in accordance with indicator system.
- The PPMU in coorperation with local authorities and social organizations will prepare periodical reports on the results of GAP implementation.
- Annually revise plan and modify to suit with actual situation.
- In order to implement GAP transparently, the monitoring and evaluation mechanism will be established and implemented in all components of the subproject during the project period.

4.5.2. Internal monitoring

- Ensure all negative impacts of subproject on women, children, ethnic minorities, vulnerable people will be mitigated or compensated.
- Ensure appropriate implementation of benefit enhancement and mititgation of negative impact.
- Ensure consultation with community in a free, prior, and informed manner and ratio of women, ethnic minorities, vulnerable people involved.

PPMU will carry out monthly monitoring. All results of internal monitoring will be reported to CPMU and WB. In fact, internal monitoring will be done in integration with monitoring RAP implementation. Results of all monitoring will be presented in one report to submit CPMU and WB.

4.6. Cost estimate

No.	Activities		Cost (VND)
1	The public disclosure of information relating to the project	All of 4 components	5,000,000
2	Organize training on community supervision in the implementation of irrigation projects for the community monitoring committee	Component 1	20,000,000
3	Communication and raising awareness to the people about the risks that may occur during project construction,	Component 1	5,000,000
4	Communication and raising awareness through organizing training for local communities downstream of the risks	Component 2	10,000,000
5	Organize gender training activities	Component 3	20,000,000
6	Training on household's financial management for female group in ethnic minorities	Component 3	20,000,000
7	minorities; - Training on agricultural extension for growing dragon fruit for male and female groups in ethnic minorities	Component 3	40,000,000
8	Training on these measures to reduce disaster risk for the project management unit levels, local authorities, community officials and local residents	Component 4	20,000,000
Total: 140,000,000			

APPENDIX B5 - GRIEVANCE REDRESS MECHANISM

Complaints relating to any matter of the Project will be settled through negotiations aimed at achieving consensus. The complaint will pass through three stages before it can be filed to the court. The Enforcement Body will incur all administrative and legal fees relating to complaint handling.

The complaints relating to the Project shall be settled in compliance with Article 138 of the Land Law 2003; Article 28 of the Law on Complaints; Article 63 and 64 of Decree No.84/2007/ND-CP; Clause 2 of Article 40 of Decree No.69/2009 and regulations on complaints in Decree No.75/2012/ND-CP dated 20/11/2012. According to Clause 2 in Article 138 of the Land Law 2003 and 2013:

(i) In case of complaints against administrative decisions and administrative actions on land management first settled by the Chairman of the People's Committees of districts, towns and cities under the province, without contentment of the complainant, the complaints can be filed to the People's Court or appealed to the Chairman of the People's Committees of provinces and centrally-run cities. In case of appeal to the Chairman of the People's Committees of provinces and cities under central authority, the decision of the Chairman of the People's Committees of provinces and cities under central authority is the final one.

(ii) In case of complaints against administrative decisions and administrative actions on land management first will be settled by the Chairman of the People's Committees of districts, towns and cities under the province, without contentment of the complainant, the complaints can be filed to the People's Court.

(iii) The time limit for complaints against administrative decisions and administrative actions on Land Management is thirty (30) days after the date of receipt of the administrative decision or being informed of that administrative decision. Within 45 days from the date of receipt of the first complaint resolution decision, the complainant, if disagree, can make an appeal to the state authority or the People's Court.

In terms of complaint settlement, in Law on Complaints, Article 14: Rights and obligations of the person competent to settle first-time complaints:

(i) The person competent to settle first-time complaints should:

   a) Ask the complainant, relevant agencies, organizations and individuals to provide information, documents and evidence within 07 days of the request as a basis for complaint settlement;

   b) Determine to employ or cancel the emergency measures as defined in Article 35 of this Law;

(ii) The person competent to settle first-time complains should perform the following obligations:

   a) To receive the complaint and issue a notice in writing to the complainant, agencies, organizations, or individuals entiltled to appeal and the state inspection agencies at the same level of acceptance of resolving complaints against administrative decisions and actions;

   b) To settle the complaints against administrative decisions and actions if required by the complainant;

   c) To open a dialogue with the complainant and agencies, organizations and individuals concerned;

d) To decide complaint settlement and be responsible before the law for settlement results. In case of complaints from authorized agencies, organizations and individuals, the results shall be notified to agencies, organizations and individuals in accordance with law;

e) To provide information, documents and evidence relating to the complaint for the complainant when they are required by the complainant for second-time settlement or appeal to the People's Court.

(iii) To compensate for first-time settlement and damages due to administrative decisions and actions in accordance with regulations on the State responsibilities.

(iv) The person competent to settle first-time complaints should perform their rights and obligations as stipulated by Law.

In terms of announcement of complaint settlement decision: In Article 12 of Decree No.75/2012/ND-CP dated October 3rd, 2012 of the Government detailing the implementation of some articles of the Law on Complaint.

(i) Within 15 days from the date of decision of complaint settlement, the person competent to settle the complaint for the second time shall announce the complaint settlement decision by one of the forms specified in Clause 2 in Article 41 of the Law on Complaints.

(ii) In case of announcement at a meeting, the attendees of the meeting must include: the person issuing the complaint settlement decision, the complainant or their representatives, the person subject to complaint and agencies, organizations and individuals concerned. Before conducting a public meeting, the person competent to settle complaints must send a notice to agencies, organizations and individuals involved 3 days in advance.

(iii) The announcement of complaint settlement decision shall be made on the mass media (television, radio, printed and electronic newspaper). If the agency of the person competent to settle complaints has their own portal or website, the complaint settlement decision should be made public on this portal or website. The minimum number of announcement is 02 times on radio, television, and printed publications. The period of announcement on electronic publications, portals or websites should be at least 15 days from the date of notification.

(iv) In case of notice at the office or the Reception Room of agencies and organizations competent to settle complaints, the period for the notice of complaint settlement decision to be posted up is at least 15 days.

The procedure for complaint settlement consists of 4 stages as below:

Complaints relating to any aspect of the project will be handled through negotiation aimed at achieving consensus. Complaints will pass through three stages before putting the law in court as a last resort. CPO will bear all the administrative costs incurred in legal and resolving complaints and grievances.

1. The first stage in the Communal People's Committee:

Households affected can file their complaints to any member of the CPC, possibly through the village chief or directly to the CPC in writing. The mission of the CPC officials or village chief is informing the entire CPC the complaint. Then, the CPC will hold a private meeting with the households affected and sign the complaint decision from 30-45 days. The CPC secretary shall be responsible for compiling and filing documentation of all complaints handled by the CPC

The duration of first-time settlement of complaints shall not exceed 30 days from the date of signing the complaint decision

2. The second stage in the District People's Committee:

the Chairman of the DPC shall settle the complaint within the period of 30-45 days from the date of signing complaint decision

Within 30 days from the date of receipt of the settlement decision of the Chairman of the DPC that the complainant does not agree with, the appeal can be filed to the People's Court or the provincial People's Committee.

3. The third stage in the Provincial People's Committee:

Upon receiving a complaint from the household, the PPC will have 30-45 days after receiving the complaint to resolve the case. PPC is responsible for documenting and storing documents of all complaints were submitted.

When the province issued Decision, households may appeal within 30 days. If the second decision has been issued and the household is still not satisfied with the decision, they may appeal to the court within 45 days. PPC will then deposit the compensation payment into an account kept.

4. The final phase, the arbitration by the Court:

If the complainant filing of the case to the court and the court decision siding with the complainant, while the provincial government will have to increase the compensation subject to a court decision. In the court case on the side of the PPC, the complainant will receive sums already paid to the court.

To ensure that the grievance mechanism described above is practical and acceptable for the PAP, has consulted with the government and local communities taking into account the distinctive cultural characteristics as well as the mechanisms traditional culture in addressing and resolving grievances and conflicts issues.

Complaint resolution process for people affected have been described in the document Information on the sub-project "Repairing and improving dam safety Reservoir Dam Village" and was distributed to the affected people. To avoid unknown APs meet anyone in communes, districts or provinces to address their complaints and documents provide the name, exact address and telephone number of the person whose duty is to solve appeal to people affected can complain effectively.

Those affected will be free of all expenses related to administrative procedures and legal. The appeal court has the right to be free of cost for filing. All records of complaints and remedies and will be stored in the CPCs, the community consultation and investors communal works under the sub-project "Repairing and improving dam safety Quao River reservoirs. "

Appendix B6 - INFORMATION DISCLOSURE, ACCOUNTABILITY AND MONITORING

1. Consultation and announcement

The main objectives of information announcement and public consultation is to ensure the participation of affected communities, households, local governments and organizations concerned in sharing the Project information, consulting the selection of technical plans, planning impacts on land, income and assets on land... The announcement is an important contribution in accerlerating the Project progress during implementation and preparation, as well as when the project is put into operation with the consensus of the community, government, and PMU. This will minimize the possibility of conflicts and other risks and increase the investment efficiency and social significance of the Project.

The public consultation and announcement should ensure:

- The local authorities as well as the representatives of the people affected shall be involved in the project planning and decision making process. The PMU shall work closely with the commune/district during the implementation of the Project. The involvement of the people affected in the implementation process shall be remained by asking the commune/district to invite the representatives of the affected people to be a part of the Council on Compensation and Resettlement as well as in resettlement activities.
- All information about the items and activities planned for the Project should be shared to the people affected.
- The demands and priorities of the affected people, as well as their responses to the proposed policies and activities, should be collected.
- The affected people should be fully informed of the decisions influencing directly their income and lives, and can be involved in activities and making decisions on issues directly affecting them.
- The transparency in all activities relating to land acquisition, compensation, resettlement and rehabilitation should be ensured.

For the World Bank, those people affected by the project should be fully informed and consulted on resettlement and compensation plans. Consultation is the starting point for all activities related to resettlement. The people affected by resettlement may be afraid that their livelihoods and community relations can be affected, or their rights can not be guaranteed. Being involved in resettlement planning and management helps to alleviate these fears and bring the affected people the opportunity to participate in decisions that affect their lives. The implementation of resettlement without consultation may lead to an inappropriate strategy and ultimate ineffectiveness. Without consultation, the affected people may have negative reactions to the project, causing social problems, significant delay or even cancellation in completion of goals, thereby increasing the costs. As a result, with consultation, the initial resistance can be translated into the constructive participation.

For Vietnam, a further key step in strengthening democracy at grass-roots level is the Directive No.30-CT/TW of the Central Committee of the Communist Party of Vietnam in "Building and implementing regulations on grassroots democracy" and the Decree No.79/2003/ND-CP also on this issue. The key point of this legislation is the famous slogan, which is "People know, people discuss, people do and people inspect." The Ordinance No.34/2007/PL-UBTVQH11 has addressed the matters that should be consulted by local governments and communities before decision-making by the authorities, including building compensation and resettlement plans relating to the project and works in the commune/ward. The Clause 2 in Article 39 of the Law on

Land 2003 requires the announcement of resettlement issues such as reasons, land acquisition plans, relocation plans, overall compensation plans, and land clearance to the people affected.

Thus, consultation and participation is an innovation in the implementation of projects in Vietnam. This policy will address the shortcomings in the implementation of the projects, as both the locals and the person in charge of project implementation are inexperienced in this field.

The following points should be noted to encourage the participation of stakeholders in the consultation process of the project:

- Identify and attract all stakeholders, especially people living in the project area and those affected (men, women, the poor, ethnic minorities...), in the process of consultation and participation;
- Develop participatory strategies for Project planning, implementation, monitoring and evaluation.
- Develop the topics and content needed for promotion and popularization campaigns, as well as negotiation procedures for the affected people on their benefits.
- Attract stakeholders in decision making at all stages of the project (e.g. design plans, compensation methods, implementation schedule, etc...).
- Establish a schedule for completion of activities such as campaigns to provide information, the extents and forms of compensation, benefits, location and relocation plan.
- Develop procedures for complaint settlement.

The public consultation should be regularly carried out for the units in charge of preparation and detailed design of the project categories. This helps to ensure the participation of communities in the proposed designs and limit the adverse impacts on the community. This also helps works to be friendlier with the community and users.

The consultation should also be performed with related parties, including the units to be in charge of management and operation of works to ensure that they are consulted and commented on the designs.

During the construction stage, the Project owner should announce promotion in mass media regarding construction activities and expected schedule, measures to support the people affected and the procedure for receipt of feedbacks from the community. The affected persons shall be informed of the Project policies and procedures to ensure no many changes in their future lives. In case of any questions about the Project, they can inform and obtain the support from the PMU.

The content and method of public consultation / announcement is as follows:

Items	Method of public consultation/announcement	Period	Person in charge
1. Detailed design drawings: Alignment alternatives	Meeting with the government of the ward/commune and relevant units; the representatives of the affected households.	Survey and design stages	the Consultant, PMU
2. Land acquisition, clearance and compensation.	The ward/communal staff, together with PMU staff, shall consult with APs for initial assessments. Land acquisition and	Prior-implementation stage	the Communal People's Committee, PMU

	compensation plans shall be developed and discussed with APs before submission to authorities for decision. Policy announcement and explanation shall be made in meetings with APs.		
3. Project implementation progress, monitoring mechanism and accountability	Meetings in residential blocks, posters and notices in public	The commencement stage and during implementation stage	the Communal People's Committee, PMU
4. Employment and wages of local labor.	Meeting between the Construction unit, local authorities/supervision board and the local	Prior-construction stage	The construction contractor, local authority and the community
5. Potential adverse impacts and mitigation measures	Combined with Item 2 and 3 above	Prior and during implementation stage.	PMU, construction contractor, the communal people's committee

2 Social accountability

The announcement of the proposed plans of the Project to the affected people and stakeholders during community consultation and field survey by the social assessment consultants is to make a paradigm for continuing public information during the project implementation. Moreover, as required at all public meetings, the affected always wish for meetings to regularly exchange information with PMU at the headquarters of CPC where the community will suffer from impacts during project implementation. Therefore, reports on resettlement plans and environmental management plans should reflect the responsibility of PMU in ensuring the regular announcement of information to the public.

In addition to regular meetings between the PMU and the affected communities in CPC offices, the public meetings in all communes where public consultation has been conducted have identified the need to establish the tight connection for easy and quick contact with the PMU. The best way is to provide the phone number and address of the PMU in charge in all locations of the Project's items and the headquarters of all the communes of the entire Project's components.

3. Participatory supervision

In order for the project components to ensure its effecicney and necessasity, it is neccessary to have a monitoring plan with the participation of stakeholders such as the Department of Natural Resources and Environment, Department of Construction, Department of Planning and Investment, Department of Transport ... After completion, the direct management and operation agency/ unit of the project items should be involved in the design and construction proceses.

Together with the independent monitoring unit of the project, there should have a community-level supervision division to monitor project activities, especially activities related to resettlement, sanitation and the construction of various items. The supervision division will include representatives of local authorities, representatives of organizations such as the Women's Union, Fatherland Front, Veterans, Association, representatives of local people... This The supervision division in collaboration with independent monitoring unit of the Project will monitor the project activities based on indicators of social safety. Indicators of rehabilitation, production, environmental sanitation, traffic will be built to serve the monitoring plan of the Project. The grasping reality will help community supervision division report information related to the project progress, problems arisen during the project implementation to the PMU for promptly actions. The responsibility of this division is to collect feedback from the people and competent authorities as well as from the PMU. At the same time, people are also involved in the supervision, safety guarantee and sanitation in the construction phase.

The Community supervision division should be involved in the training plan on strengthening monitoring and evaluation of project activities, training on monitoring activity skills as a part of the participatory monitoring plan of the Project.

It is noted that the Resolution 80/ CP on community supervision for construction works in localities should be applied.