

NINH THUAN PROVINCIAL PEOPLE'S COMMITTEE
NINH THUAN PROJECT MANAGEMENT UNIT OF CONSTRUCTION INVESTMENT WORKS FOR
AGRICULTURE AND RURAL DEVELOPMENT

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VIET NAM - EMERGENCY NATURAL DISASTER RECONSTRUCTION PROJECT (EFDR)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The first 18-month Subproject



JULY, 2017

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ABBREVIATIONS

BOD ₅	Biochemical Oxygen Demand (5 days)
C/D/PPC	Commune/District/Provincial People's Committee
COD	Chemical Oxygen Demand
CSC	Construction Supervision Consultant
DOH	Department of Health
DONRE	Department of Natural Resources and Environment
ECOP	Environmental Codes of Practice
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GCC	General Conditions of Contract
MONRE	Ministry of Natural Resources and Environment
OHS	Occupational Health and Safety
OP / BP	Operational Policy / Bank Procedure
PCC	Particular Conditions of Contract
PPMU	Provincial Project Management Unit
QCVN / TCVN	National Technical Regulation of the Government of Vietnam
SPDs	Standard Procurement Documents
TSS	Total Suspended Solid
US EPA	United States Environmental Protection Agency
USD	U.S Dollar
USGBC	United States Green Building Council
VND	Vietnam Dong
VOC	Volatile Organic Compound
WB	World Bank

EXECUTIVE SUMMARY

Introduction: The Government of Vietnam received a loan from the World Bank for **Vietnam Emergency Natural Disaster Reconstruction Project** including Binh Dinh, Phu Yen, Ninh Thuan, Quang Ngai and Ha Tinh provinces (hereafter called the ENDR). The Project Development Objective is to reconstruct infrastructure assets in the project areas. The project consists of 03 components including: (1) **Resilient Reconstruction of Damaged Public Use and Preventive Infrastructure at the Provincial Level**; (2) **Disaster Recovery Capacity Enhancement**; and (3) **Project Management Support**. Tentative time of the ENDR project implementation is 4 years, from 2017 and to 2020. The total project cost is US\$ 135.83 million.

The Ninh Thuan subproject includes three civil work items: (i) construction of 1,373m of protective embankment of Dinh river in Phuoc Son commune.; (ii) construction of 1,500m of protective embankment in Ba Rau stream for Ba Rau residential area, Loi Hai commune; and (iii) construction of 3,139.88m of embankment of Lu river to protect the residential area of Phuoc Dan town.

The subproject ESMP is prepared in line with the World Bank's safeguard policies as well as the GoV's environmental regulations. All activities in preparation, construction and operation stages of the subproject have been analyzed, evaluated and forecasted for the potential negative impacts in order to propose the mitigation measures for the adverse impacts on the environment and human health.

Potential environmental impacts and mitigation measures: The subproject would have both positive and negative impacts.

- (a) Positive impacts: 03 river bank embankment items in Loi Hai commune, Thuan Bac district and Phuoc Son commune, Phuoc Dan town, Ninh Phuoc district are to prevent river banks from landslide and to protect land as well as structures, thereby, minimizing disaster-related damages, ensuring residential areas, safety, assets and long-term arable land of people living along the river, and contributing to protection of local basic infrastructures. At the same time, the revetments will make significant contribution to improvement of the environmental landscape, transportation infrastructures and embankment system in the communes.
- (b) Negative impacts during pre-construction and construction: The potential negative impacts include land acquisition. Results of the survey show that the implementation of the subproject items will affect 165 households, of which 163 households are directly affected by physically taking of land, and 02 households in Phuoc Son commune are indirectly affected by economic loss of cultivations. There would also be impacts associated with construction activities such as noise and vibration, air pollution due to dust and exhaust emission, water and soil pollution due to wastes, erosion and sedimentation, social conflicts due to influx of workers, vegetation clearance, traffic disturbance, loss of income, accident risk, etc. The subproject is envisaged to not cause significant adverse impacts given its location, type and scale. Negative impacts are considered low to moderate level.
- (c) Negative impacts during operation: the subproject is not envisaged to cause negative impacts due to generating wastes. The subproject would mainly bring positive

impacts as its objectives. The negative impact if any is only connected to erosion due to change of water flow regime.

- (d) Proposed mitigation measures for negative impacts during preconstruction and construction: Land acquisition will be mitigated through RAP while construction-related impacts will be mitigated through application of ECOP and site-specific mitigation measures.
- (e) Proposed mitigation measures for negative impacts during operation: Analysis of water flow regime, erosion and sedimentation rate before and after construction needs to be thoroughly analyzed during technical design to ensure that the subproject would not cause an increase in erosion or sedimentation due to change in water flow regime. Monitoring and supervision should be regularly carried out by the management unit to ensure that damage to the structure will be repaired in a timely manner.

Institutional Arrangements: Ninh Thuan PPMU under DARD is responsible for implementation and monitoring of the ESMP. The PPMU ensures that bidding documents and contracts duly include environmental covenants for contractor's compliance. The contractor will be implementing construction activities and complying with agreed environmental covenants in the contract. Particularly, the contractor will prepare contract ESMP for review and approval by PPMU before commencing construction. The PPMU and its consultants will closely supervise contractor's compliance with agreed mitigation measures. In addition, contractor's compliance will be closely supervised by Ninh Thuan DONRE, local authorities and people.

Capacity building: Given that PPMU has implemented the Bank-financed projects, it is familiar with the World Bank safeguard policy requirements. However, capacity development and training should be refreshed to help the PPMU to conduct effectively monitoring of ESMP implementation. A two-day training course will be organized by the World Bank safeguard specialists for the PPMU staff who will be responsible for subproject environmental safeguard issues to provide them with requirements of the operational policies of the World Bank related to the subproject implementation including OP4.01 (Environmental Assessment), IFC General EHS Guidelines, OP4.11 (Physical Cultural Resources), OP 4.04 (Natural Habitats), OP 4.10 (Indigenous Peoples) and OP4.12 (Involuntary Resettlement). Such training should be provided to Construction Supervision Consultant (CSC) and contractor's EHS officer and repeated to refresh their knowledge.

Cost estimates for ESMP implementation: The cost estimates for ESMP implementation include cost for ESMP monitoring, mitigation measure implementation and capacity building. Cost for mitigation measure implementation will be included in the construction cost. The following table shows the cost estimates for monitoring and capacity building only.

No	Activity	Cost (VNĐ)	USD
1	ESMP monitoring	532,440,000	24,357
2	Capacity building	22,000,000	1,006
	Total	554,440,000	25,363

Grievance Redress Mechanism (GRM): Complaints relating to any subproject's problems will be solved through negotiations to achieve the consensus. A complaint will go through three stages before it can be transferred to the court. The enforcement unit will pay all administrative and legal fees relating to the acceptance of complaints. This cost is included in the subproject budget.

Public Consultation: Various methods and techniques have been used to conduct public consultations, consultation with subproject-affected peoples, including a) community meetings,

b) household surveys, c) focus group discussion, field observations and key informant interviews. Using various methods and techniques aims to enhance the reliability and validity of the feedback from the subproject stakeholders, particularly the locally-affected people and to ensure that (i) affected people receive fully subproject information; and (ii) all affected people are involved in process of free, prior and informed consultation during preparation and implementation. Consultation meetings and direct interviews took place on the days 03-18 Apr 2017, with the participation of 13 to 34 affected people at each meeting. Consultations will be conducted throughout construction period to address EA-related issues in a timely manner.

Information Disclosure: In compliance with OP 4.01 and the Bank policy on access to information, the subproject owner has sent the subproject description, objectives, and impacts to the affected groups and local NGOs prior to public consultations. The draft ESMP in Vietnamese language was disclosed locally on June 7 at commune offices and the subproject website and the Bank external website in English on June 20. The final ESMP will be disclosed locally by June 25 and the Bank external website by June 30.

CHAPTER 1. INTRODUCTION

The Government of Vietnam received a loan from the World Bank for the ***Vietnam Emergency Natural Disaster Reconstruction Project*** covering Binh Dinh, Phu Yen, Ninh Thuan, Quang Ngai and Ha Tinh provinces (hereafter called the EFDR). The Project Development Objective is to reconstruct infrastructure assets in the project areas. The project consists of three components including: (1) **Resilient Reconstruction of Damaged Public Use and Preventive Infrastructure at the Provincial Level**; (2) **Disaster Recovery Capacity Enhancement**; and (3) **Project Management Support**.

Component 1: Resilient Reconstruction of Damaged Public Use and Preventive Infrastructure at the Provincial Level (US\$121.08 million, of which US\$110.69 million IDA and US\$ 10.39 million counterpart fund)

The objective of Component 1 is to strengthen resilience of flood-affected communities in five selected provinces through the reconstruction and rehabilitation of damaged critical provincial-scale infrastructure, especially irrigation, flood control, and road/bridge infrastructure. This component will be implemented by the selected provinces. The affected areas will benefit from restored access to public services/facilities, thereby increasing the economic growth and access to social services. The reconstructed critical flood prevention structures and the restored roads and bridges will also increase the safety of people and assets and serve as supply and rescue lines in the event of a disaster. It will have five subcomponents, each of which will be implemented by the respective provinces:

- (a) **Subcomponent 1: Resilient Reconstruction in Binh Dinh Province (US\$49.75 million IDA, US\$4.07 million counterpart fund).** This subcomponent will fund resilient reconstruction of damaged roads, bridges, irrigation systems and natural disaster prevention/control structures in Binh Dinh Province.
- (b) **Subcomponent 2: Resilient Reconstruction in Phu Yen Province (US\$15.05 million IDA, US\$1.26 million counterpart fund).** This subcomponent will fund resilient reconstruction of damaged roads, bridges, irrigation systems, and natural disaster prevention/control structures in Phu Yen Province.
- (c) **Subcomponent 3: Resilient Reconstruction in Quang Ngai Province (US\$14.58 million IDA, US\$2.21 million counterpart fund).** This subcomponent will fund reconstruction of damaged roads, bridges, irrigation systems, and natural disaster prevention/control structures in Quang Ngai Province.
- (d) **Subcomponent 4: Resilient Reconstruction in Ninh Thuan Province (US\$14.84 million IDA, US\$1.67 million counterpart fund).** This subcomponent will fund reconstruction of damaged roads, bridges, irrigation systems, rural water supply system and natural disaster prevention/control structures in Ninh Thuan Province.
- (e) **Subcomponent 5: Resilient Reconstruction in Ha Tinh Province (US\$16.47 million IDA, US\$1.18 million counterpart fund).** This subcomponent will fund reconstruction of damaged roads, bridges, irrigation systems, and natural disaster prevention/control structures in Ha Tinh Province.

Component 2: Disaster Recovery Capacity Enhancement (US\$2.43 million, of which US\$2.0 million GFDRR grant and US\$0.43 million counterpart fund)

25. The objective of Component 2 is to strengthen the institutional capacity of the Government at the central and provincial levels to respond to future disasters. It will be implemented by the MARD.

26. Component 2 will finance (a) evaluation of the effectiveness of the existing flood risk reduction efforts in the Central Region, using the 2016 floods as a case study; (b) building capacity of DRM agencies on the damage and loss assessment methodology; and (c) the development of emergency reconstruction and recovery procedures. Counterpart funding will partially support the participation of provincial officials to the training and workshop organized by Component 2.

Component 3: Project Management Support (US\$12.32 million, of which US\$7.31 million IDA and US\$5.01 million counterpart fund)

The objective of Component 3 is to support project management, safeguards, audits, and monitoring and evaluation (M&E). It will be implemented by the Binh Dinh Provincial People's Committee (PPC). It will fund activities related to supporting project implementation such as overall reporting, independent project-related financial audits, safeguards monitoring, M&E, project oversight, construction supervision and management, midterm reviews, and end-of-project impact evaluations. Component 3 will also fund equipment and provision of training to strengthen the Provincial Project Management Units (PPMUs), as well as individual consultants and operating costs. This component will also support coordination and reporting of the different components of the project.

The *Ninh Thuan Subproject* includes the construction solid embankments for erosion protection: 1,373 m along the Dinh in Phuoc Son commune; (ii) 3149 m along the Lu rivers in Ninh Phuoc district; and (iii) 1,500 m along the Ba Rau stream in Thuan Bac district. The existing embankments have been affected by natural disasters recently. An Environmental and Social Management Plan (ESMP, this document) has been prepared to cover the works proposed for the first 18-month of the Ninh Thuan Subproject in accordance with the Project's Environmental and Social Management Framework.

CHAPTER 2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Government Regulations

The following national laws and regulations are applied for the subproject:

- Environmental Protection Law No. 55/2014/QH13 of the National Assembly of Vietnam dated June 23, 2014. This law stipulates environmental protection activities; policies, measures and resources for environmental protection; right and obligations of organizations, households and individuals in environmental protection. Article 7 of Chapter 1 prescribes prohibited actions such as destroying and illegal exploiting natural resources; transportation and dumping of toxic product, radioactive substance, waste and hazardous waste not following technical regulations on environmental protection; disposal of untreated wastes, toxic product, radioactive substance, and other hazardous materials into land, water and air; generating noise and vibration that exceeds national technical regulation on noise and vibration; emitting dust, smoke and gases containing toxic chemicals and offensive smell into air; emitting radiation and radioactivity and ionization substances that exceeds national technical regulations. Article 18 of Chapter 2 stipulates Environmental Impacts Assessment (EIA) for investment projects.
- Land Law No. 45/2013/QH13 of the National Assembly of Vietnam dated November 29, 2013 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. Article 12 of Chapter 1 prescribes prohibited actions such as encroaching and destroying of land; violating of land planning that was publicly disclosed; improper land use; not providing or providing incorrect land information as per legal regulation. Article 16 of Chapter 2 stipulates land acquisition. Chapter 5 stipulates land acquisition, compensation, support and resettlement.
- Law on Natural Disaster Prevention and Control No. 33/2013/QH13 of the National Assembly of Vietnam dated on June 19, 2013 provides natural disaster prevention and control activities; specifies the rights and obligations of agencies, organizations, households and individuals engaged in natural disaster prevention and control activities; and details the state management of, and assurance of resources for, natural disaster prevention and control. Article 12 of Chapter 1 prescribes prohibited actions such as implementing actions to cause an increase in natural disaster risks without mitigation measures, such as destroying protection forests, encroaching river plain, riverbed, creating block, obstructing water flow, illegal extraction of sand, gravel, and minerals to cause landslide of riverside and seaside. Article 30 of Chapter 2 stipulates natural disaster reconstruction activities.
- Law on Water Resources No. 17/2012/QH13 of the National Assembly of Vietnam dated June 21, 2012 provides on management, protection, exploitation and use of water resources, as well as the prevention of, combat against and overcoming of harmful effects caused by water in the territory of the Socialist Republic of Vietnam. Chapter 3 of this law stipulates Protection of Water Resources. Extraction and use of water resources must comply with the water resources planning. Article 9 of Chapter 1 describes prohibited actions, such as discharge of wastes and illegal exploitation of sand and gravel in stream, river, channel, and reservoir.

- Law on Biodiversity No. 20/2008/QH12 of the National Assembly of Vietnam dated November 13, 2008 provides for the conservation and sustainable development of biodiversity; rights and obligations of organizations, households and individuals in the conservation and sustainable development of biodiversity. Article 7 of Chapter 1 prescribes prohibited actions such as hunting, poaching and exploiting wildlife in strictly protected subregion of protected areas, except for scientific research purposes; encroaching land, destroying landscape, degrading natural ecological systems and raising and growing alien species in protected areas; constructing works and houses in strictly protected subregion of protected areas, except for works for defence and security purposes; illegal construction of works and houses in ecological recovery subregion of protected areas.
- The Law on Construction No. 50/2014/QH13 approved on 18th June 2014 by 7th National Assembly of the Socialist Republic of Vietnam. Article 12 of Chapter 1 prescribes prohibited actions such as use of materials to cause harm to the public health and environment. Article 16 of Chapter 2 stipulates environmental protection in construction. During construction, contractors are responsible for (i) establishing and implementing environmental protection measures, including air and water environment, solid wastes, noise and other requirements in accordance with Law on Environmental Protection, and (ii) compensating for damages caused by contractors.
- The Law on Roadway Traffic No. 23/2008/QH12 dated on 13/11/2008. Articles 8 of Chapter 1 prescribes prohibited actions such as driving vehicles without licences; driving vehicles with speed exceeding allowed speed; sounding horn between 10 p.m. and 5 a.m.; driving vehicles while the body is positive with drug. Article 55 of Chapter 4 stipulates ensuring technical safety quality and environmental protection for vehicles moving on roadways.
- The Law on Complaint No. 02/2011/QH13 dated 11 November 2011. This law stipulates complaint and handling complaint; management and monitoring of complaint handling. Article 6 of Chapter 1 prescribes prohibited actions such as limited responsibility for handling complaint; creating wrong information and documents of compliant cases; intentionally handling complaint not following legal regulation; impeding and causing inconvenience for people who conduct complaint right; threatening, revenging, and victimizing complainant. Article 7 of Chapter 2 stipulates complaint procedures; Article 8 of Chapter 2 stipulates complaint form; Article 9 of Chapter 2 stipulates complaint prescription.
- Labor Law No.10/2012/QH13. This law stipulates labour standard; right and obligation of employee, employer, representative organization of employee, representative organization of employer in labour relations and other relations directly related to labour relations; state management of labour. Article 8 of Chapter 1 prescribes prohibited actions such as discrimination of gender, ethnicity, skin colour, social status, belief, religion, disability; labour forcing; use of untrained employee; use of employee with age not following legal regulation.
- The Law on Culture Heritage No. 28/2001/QH10. This law aims to (i) reinforce the state management effectiveness and (ii) raise responsibility of people for participation, protection and promotion of the value of cultural heritages. Article 13 of Chapter 1 prescribes prohibited actions such as destroying and causing potential destruction of

cultural heritage; illegal excavation of archaeological sites; illegal construction and encroaching land of historical relics and famous landscape; appropriating of cultural heritage and making of untrue cultural heritage. Article 37 of Chapter 4 stipulates chance find procedures.

- The Law on Safety, Labor Sanitation No. 84/2015/QH13 dated June 25, 2015. This law stipulates ensuring safety and labour sanitation; policy and regulation for labour accident and occupational diseases; responsibility and right of organizations and individuals in safety and labour sanitation and state management of safety and labour sanitation. Article 12 of Chapter 1 prescribes prohibited actions such as cheating at verification, safety training, labour sanitation, monitoring labour environment; discrimination of gender in safety insurance, labour sanitation; hiding or reporting untrue labour accidents; not implementing requirements and measures for safety insurance, labour sanitation to cause harm or potential harm to human, assets and environment; use of equipment and machinery requiring strictly requirements on safety and labour sanitation but not verified or verified results not satisfying requirements. Article 14 of Chapter 2 stipulates training in safety and labour sanitation for employee. Article 16 of Chapter 2 stipulates employer's obligation in ensuring safety and labour safety at workplace.
- Law on Fire Prevention and Fighting No.27/2001/QH10 dated June 29, 2001. This law stipulates fire prevention and fighting; establishing human resources, equipment and machineries and policy on fire prevention and fighting. Article 13 of Chapter 1 prescribes prohibited actions such as construction of works which the design for fire prevention and fighting has not been reviewed and approved; approval and put into operation of works which have not yet satisfied conditions of fire prevention and fighting. Article 4 of Chapter 1 prescribes principles of fire prevention and fighting.
- Law on Electricity No.28/2004/QH11dated December 14, 2004. This law stipulates planning and investment in electricity; electricity saving; electricity market; right and obligation of organizations and individuals in electricity use; protection of electricity equipment and works; electricity safety. Article 7 of Chapter 1 prescribes prohibited actions such as destroying electricity equipment and works; violating safety regulations on electricity generation, transmission and distribution; violating regulations on protection of electricity network safety corridor, and safety distance between transmission line and substation.
- Decree No.14/2014/ND-CP on Electricity Safety dated February 26, 2014.
- Decree No.117/2009/ND-CP dated December 31, 2009 on sanction of violations in the field of environmental protection.
- Decree No.59/2007/ND-CP dated April 9, 2008 on solid waste management.
- Decree 174/2007/ND-CP dated November 29, 2007 of GOV on environmental protection charges for solid wastes.
- Decree 155/2016/NĐ-CP dated 118 November 2016 on punishment on administrative violation in environmental protection.
- Decree No.98/2010/ND-CP of the Government dated September 21,2010 on detailing the implementation of some articles of the Law on Cultural Heritage and the Law amending and supplementing some articles of Law on cultural heritage.

- Decree No. 59/2015/ND-CP of Vietnam Government issued on June 18, 2015 on Construction Investment Project Management.
- Decree No. 46/2015/ND-CP of Vietnam Government issued on May 12, 2015 on Construction Work Maintenance and Quality Management.
- Decree No. 18/2015/ND-CP of Vietnam Government issued on Feb 14, 2015 on Environmental Protection Planning, SEA, EIA and Environmental Protection Plans.
- Decree No. 19/2015/ND-CP of Vietnam Government issued on Feb 14, 2015 on detailing some articles of Law of Environmental Protection.
- Circular No. 27/2015/TT-BTNMT dated May 29, 2015 on SEA, EIA and EPP.
- Circular No. 36/2015/TT-BTNMT dated June 30, 2015 on Hazardous Waste Management.

The applicable National Technical Regulations and Standards include:

- QCVN 14:2008/BTNMT- National technical regulation on domestic wastewater.
- QCVN 01:2009/BYT- national technical regulation on drinking water quality.
- QCVN 02:2009/BYT- national technical regulation on domestic water quality.
- QCVN 06:2009/BTNMT-air quality -specified maximum allowable concentrations of certain hazardous substances in ambient air.
- QCVN 07:2009/BTNMT - National Technical Regulation on Hazardous Waste Thresholds.
- QCVN26:2010/BTNMT- National technical regulation on maximum noise limit in public and residential areas.
- QCVN 27:2010/BTNMT- National technical regulation on vibration.
- QCVN 40:2011/BTNMT- National technical regulations on industrial wastewater.
- QCVN 05:2013/BTNMT- National technical regulation on ambient air quality.
- QCVN 08-MT: 2015/BTNMT - National technical regulation on surface water.
- QCVN 09-MT: 2015/BTNMT - National technical regulation on groundwater.
- QCVN 03-MT: 2015/BTNMT - National technical regulation on the allowable limits of heavy metals in the soils.
- QCVN 43:2012/BTNMT - National technical regulation on sediment quality.
- STANDARD OF VIETNAM7222:2002 - General environmental requirements for central domestic (municipal) wastewater treatment plants.
- QCVN 18:2014/BXD - National technical regulation on Safety in Construction.
- TCVN 9902:2016: Irrigation Works – Specifications for Design of River Dikes.
- TCVN 4118:2012: Irrigation Wroks – Specifications for Design of Irrigation Canal Systems.
- Decision No. 3733/2002/QD-BYT dated Oct 10, 2002 of Ministry of Health on publishing 21 occupational sanitation standards, 05 principles and 07 parameters of occupational sanitation.

- Other relevant sector technical regulation and standards.

2.2. Applicable the World Bank Safeguard Policies

2.2.1. Project level

An environmental and social screening of the Project was undertaken in line with the OP 4.01 and it showed that The following World Bank's safeguard policies have been triggered: Environmental Assessment (OP/BP 4.01), Physical Cultural Resources (OP/BP 4.11), Natural Habitats (OP/BP 4.04), Indigenous Peoples (OP/BOP 4.10), Involuntary Resettlement (OP/BP 4.12), and Pest Management (OP 4.09). The Project has been classified as Environmental Category B. In addition, the Bank's requirements on public consultation and information disclosure will be met .

2.2.2. Subproject Level

Environmental Assessment (OP / BP 4.01)

Environmental Assessment (EA) is an umbrella policy for the Bank's safeguard policies. The overarching objective is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. The EA process is intended to identify, avoid and mitigate potential impacts of Bank operations. EA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources); and trans-boundary and global environmental aspects. EA considers natural and social aspects in an integrated way.

This subproject triggers OP 4.01 because it involves the construction of river and stream embankments which would likely cause potential negative environmental and social impacts. As required by OP 4.01, the subproject has prepared an ESMP that meet the GoV's regulations and the World Bank's safeguard policy requirements. By the appraisal, the subproject draft ESMP will be disclosed locally at the subproject areas and through the Bank's Operations Portal as required by OP 4.01 and the Bank's policy on access to information. The final subproject ESMP will be disclosed locally at the subproject sites and through the Bank's information system.

Physical Cultural Resources (OP/BP 4.11)

This policy is triggered because the subproject construction activities may affect the pagoda by construction traffic. In addition, since the subproject involves excavation that may encounter PCRs under the ground. Mitigation measures for impacts on the pagoda have been proposed in the section of site-specific mitigation measures while ECOP included measures to address chance finds.

Involuntary Resettlement (OP/BP 4.12)

The Involuntary Resettlement policy seeks to prevent severe long-term hardship, impoverishment, and environmental damage to the affected peoples during involuntary resettlement. OP 4.12 applies whether or not affected persons must move to another location. The Bank describes all these processes and outcomes as "involuntary resettlement," or simply resettlement, even when people are not forced to move. Resettlement is involuntary when the government has the right to expropriate land or other assets and when affected people do not have the option to retain the livelihood situation that they have.

This policy is triggered because the subproject would have impacts involving the temporary and permanent involuntary taking of land and the loss of structures and assets associated with the land for the construction of the university. By appraisal, the subproject has prepared and

disclosed RPF and RAP. The RPF and RAP have been included the measures to ensure that displaced people are: (i) informed about the options regarding resettlement; (ii) consulted and offered alternative resettlement choices; and (iii) provided with effective compensation and livelihood restoration.

World Bank Group Environmental, Health, and Safety Guidelines

World Bank-financed projects should also take into account the World Bank Group Environmental, Health, and Safety Guidelines¹ (known as the "EHS Guidelines"). The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice.

The EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group and are generally considered to be achievable in new facilities at reasonable costs by existing technology. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to the World Bank, become project-or site-specific requirements. This subproject should conform to the General EHS Guidelines.

¹The EHS Guidelines can be consulted at IFC website
www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines.

CHAPTER 3. DESCRIPTION OF THE SUBPROJECT

3.1. General information

Subproject name: Vietnam Emergency Natural Disaster Reconstruction Project – Ninh Thuan province

Project owner: Ninh Thuan provincial People's Committee

Implementation Agency: Ninh Thuan Project Management Unit of Construction Investment Works for Agriculture and Rural Development.

3.2. Objectives of the Subproject

Long-term objectives

- Overcome the damages caused by natural disaster, restore production, ensure safety and subsistence of local people affected by natural disasters, storms, floods and droughts;
- Strengthen the storm and flood resistance for vulnerable areas in the future.

Short-term objectives

- Construction of Dinh, Lu rivers and Ba Rau stream embankments; protection of agricultural cultivation land area, protection of lives and properties of local people, mitigation of risks caused by natural disaster.
- Create environmental landscape and favorable conditions for transport in the region, meeting the requirements on transportation of materials and equipment for urgent rescue of local people in flooded and drought areas in case of disasters, flood.
- Strengthen the capacity of Client in the project implementation and management

3.3. Description of the Subproject

3.3.1. Subproject location

The subproject will be implemented in Phuoc Son commune, Phuoc Dan town, Ninh Phuoc district and Loi Hai commune in Thuan Bac district of Ninh Thuan province.

All three items of embankments were selected to be implemented in areas that have been damaged by natural disasters in recent years;



Figure 1: Location map of Ninh Thuan Province

3.3.2. Scope of Works

The proposed scope of works is summarized in the Table 1 below.

Table 1: Summary of Proposed Works

No.	Construction works	Location	Scope	Targeted protection	Total cost (billion VND)
1	Item 1: Protective embankment of Dinh river, Phuoc Son commune	Phuoc Son commune, Ninh Phuoc district	Construction of river bank revetment with total length of 1,373m and width of embankment top is 4m with thickness of 20cm;	over 100 hectares of grapes, apples and 500KV powerline	48.02
2	Item 2: Bo Rau stream embankment for protection of Ba Rau residential area	Loi Hai commune, Thuan Bac district	Construction of stream bank revetment works with total length of 1,500m, embankment top is 3m wide, 20cm thick;	741 households in Raglai and Cham ethnic group in Ba Rau 1 and Ba Rau 2 villages.	20.53
3	Item 3: Lu river embankment for protection of residential area in Phuoc Dan town	Phuoc Dan town, Phuoc Ninh district	Construction of revetment to protect Lu 2 river bank, section across Phuoc Dan town with length of 2,139.88m, embankment top is 5m wide, 18cm thick;	6,850 households/ 28,549 people of Phuoc Dan town in flood season.	33.08

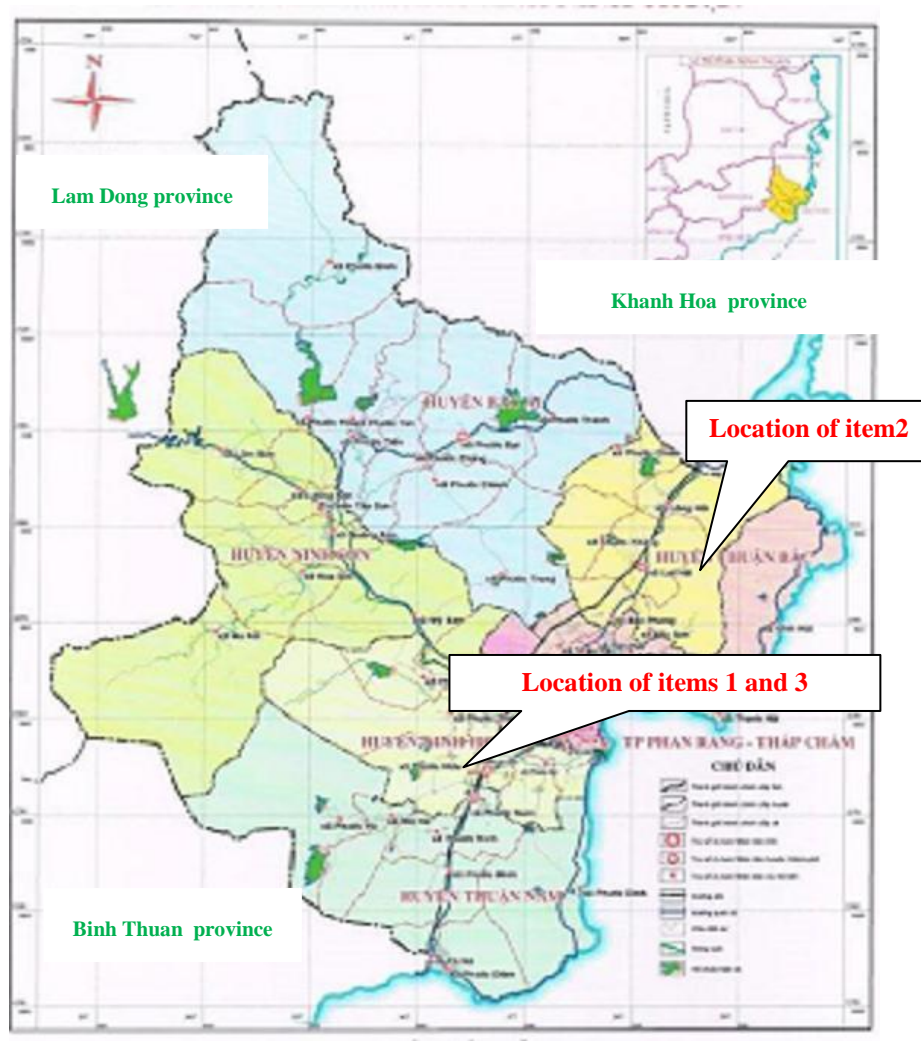


Figure 2: Location of the Subproject

The Scope of Works are described in detail below.

3.3.2.1 Activity 1: Construction protective embankment of Dinh river in Phuoc Son commune, Ninh Phuoc district

A. Current status of the embankment

The Dinh River, known as Cai Phan Rang river, is the largest river in Ninh Thuan province, with a total basin area of 3,043 km². In the 2016 flood season, the river bank section Phuoc Son commune was severely eroded, affecting the lives and properties of the people living along the river. Erosion happened along 660m section on the right bank of the Dinh river in Phuoc Son commune, the eroded width is from the edge of former river bank encroaching average 30m into the production land of local people. The elevation of the cultivation land of the people which has been eroded with an elevation from + 18.50 m to +14.5 m. Elevation of river bed varies from +9.5 to + 8.50m. At the curved crest of the river section, there is a ditch discharging into the river, forming the scour hole with elevation of about + 5.00m; the altitude of construction sites from 17 to 19m above sea level.



B. Basic specifications

Embankment foot against erosion of the slope roof foot and support the base of the embankment body. Structure of the embankment foot is dropping off freestone, elevation of freestone is + 9.0m-> 8.33m, width of freestone rop top B = 2.0m; Embankment top protects embankment body against impacts of surface flow and other impacts; it is combined with management roads. Embankment top is 20cm thick, 4 m wide, made of concrete. Elevation of embankment top: +17.20m to +15.0 m, basically follows attitude of natural ground of existing river bank. Embankment body is affected by flow, wave, water pressure and percolation pressure. Embankment body is freestone arranged in reinforced concrete framework M250; Beneath the rock layer is The filtering layer is beneath freestone layer, made by macadam stone with thickness of 0.10m and geotextile fabric filtering.

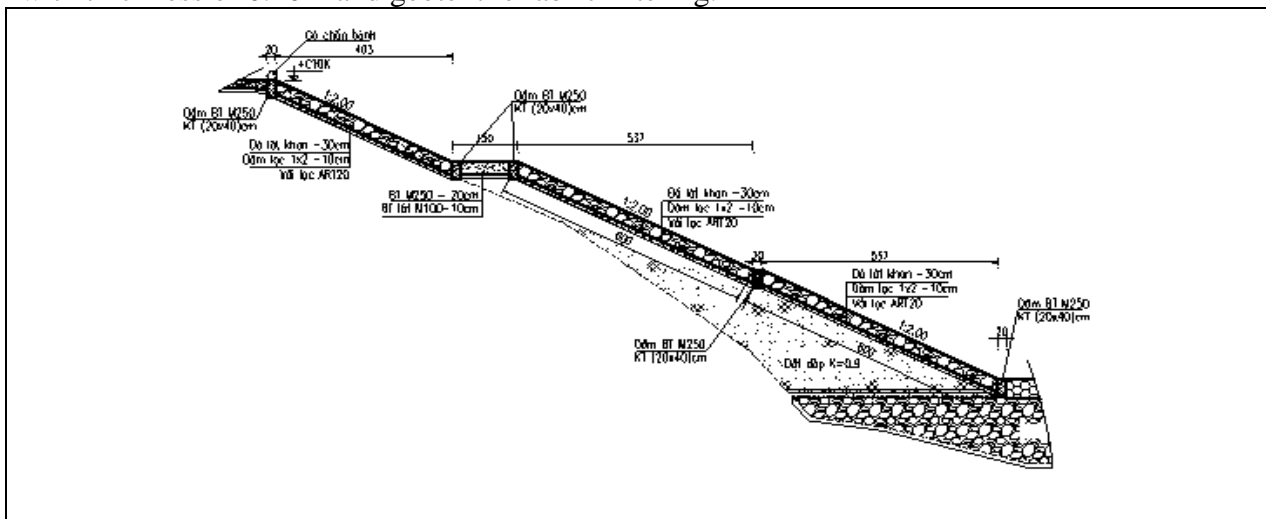
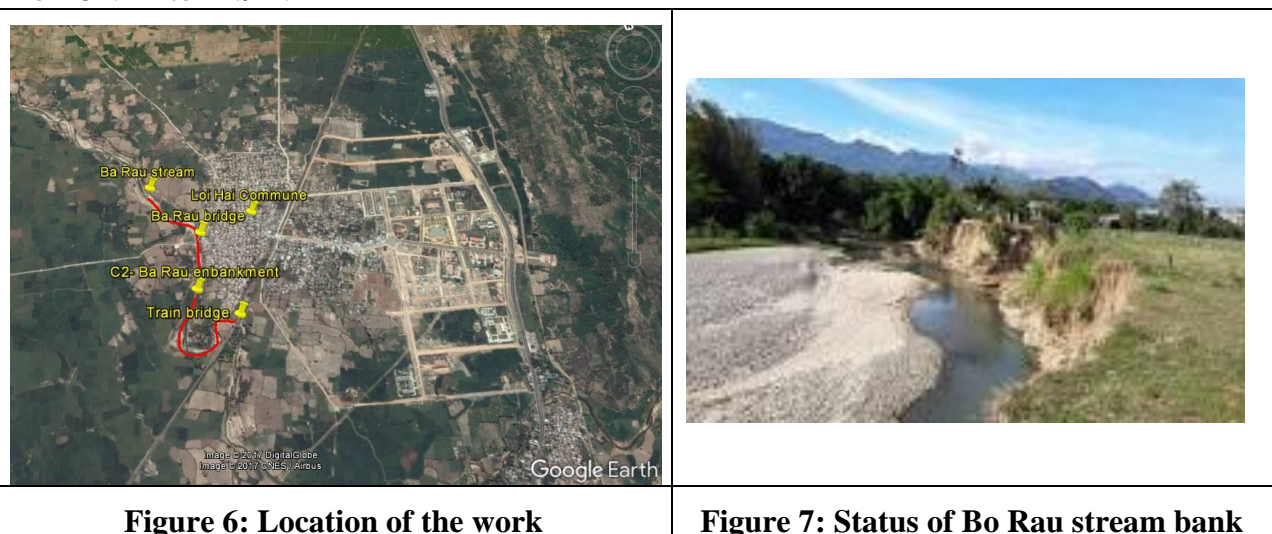


Figure 5: Cross section of Dinh river embankment

3.3.2.2. Activity 2: Construction of Bo Rau stream embankment for protection of the residential area in Loi Hai commune, Thuan Bac district**A. Current status**

Currently, along the stream section from Ba Rau dam to Ba Rau residential area in Loi Hai commune, altitude of construction site from 8 to 10m. There are some seriously landslide segments which cause coastal house collapse, tend to deeply encroach into the residential area and disable part of arable land along the stream banks. Erosion observed in Ba Rau residential area to the right bank of Ba Rau stream. The landslide length along river banks is approximately 1,500m. The landslide width is from the edge of former river to the production land of local people with around (5÷10)m. Topography of the landslide area is relatively complicated, the height of the deepest bottom ranges from +26.3m to +22.1m, the average on-land height varies from 31.2m to 24.9m.



The area is slope from the Northwest to Southeast. The elevation of river banks is from 1 to 4 m with vertical sliding. Many crack traits were found in many river bank segments and prone to encroach deeply into residential area and production land of local people. Additionally, the upcoming rainy season tends to be complicated and needs promptly resilient solutions.

B. Basic specifications

Construction of stream embankment with a length of 1,500m. The start point is about 400 away from Ba Rau residential area towards the upstream; the end point is at the bridge across the North-South railway. The bank protection structure is expected to have three major parts: Embankment top, roof and cut-off wall.

Embankment structures:

+ *Embankment top*: Combined with management and local roads of 5 m wide, reinforced by cast-in-place concrete M 250 with a thickness of 20cm, the lower layer is class-1 macadam with a thickness of 15cm. Every segment with distance of 5m will be set with a settlement joint. To the right of stream bank, reinforced concrete M250 curbs are set on the stream banks with a dimension of (1x0.20x0.25)m; every curb is placed every 1 m.

+ *Embankment roof*: Roof coefficient $m=2,0$; Reinforcement of roof by pre-cast concrete M250 structure with a dimension of (40x40x20)cm, under reinforced concrete (RC) frame, vertical and horizontal beam linking together, section of the beam $b \times h = (0.2 \times 0.3)$ m, beneath of

the structure is a macadam layer (1x2) with a lining layer of 10cm thick and non-woven geotextile as a filtering layer and underground water drainage.

+ *Embankment foot*: structured of steel gabion of rubble stone with gabion dimension of (2x1x0.50)m; the inside is the beam of the embankment roof, it is deeply put under the natural soil surface to avoid embankment foot erosion. Elevation of embankment top: 28.63÷ 25.01, Elevation of embankment foot peak: 26.84 ÷ 23.22. - Elevation of the embankment top is the current elevation of river bank, elevation of embankment foot is beneath the natural soil layer.

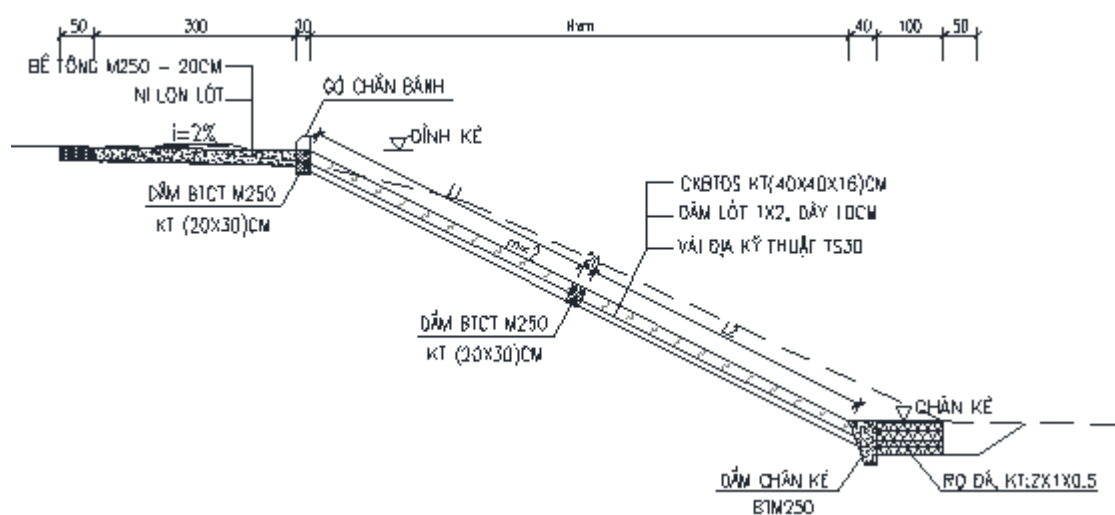


Figure 8: Cross section of Bo Rau stream embankment

3.3.2.3. Activity 3: Construction of Lu River Bank revetment for Protection of Residential Area in Phuoc Dan town, Ninh Phuoc district

A. Current status of the construction area

Landslide has been increasing over previous years, especially in the section through Phuoc Son town. Landslide in Lu river is under complicated development, causing direct impacts on assets and safety of people along the river. As historic flood at the end of October 2010, the area suffered from widespread and long-term flooding, threatening the safety and assets of people along both banks.

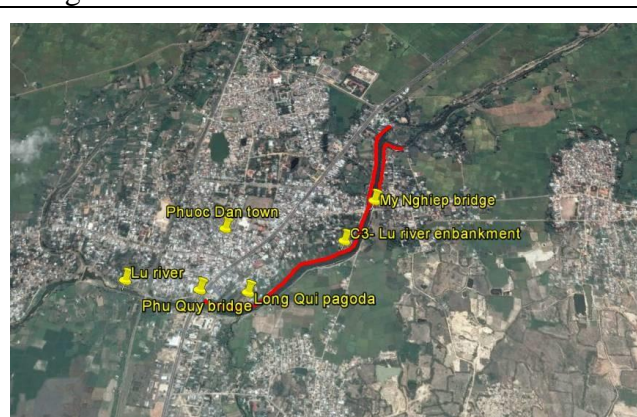


Figure 9: The embankment section



Figure 10: Status of Lu river bank

B. Basic specifications

Construction of Lu river revetment for protection of 02 segments running through Phuoc Dan town, altitude of construction site from 17 to 18m. Total length: 2,139.88m. Of which: The

left revetment L=1,702.00m, starting from Phu Quy bridge on National Highway (NH) 1A to the syphon 12. The right revetment L=437.88m, starting from My Nghiep bridge to the syphon 13.

- (2) Structure solutions: Construction of soft revetment by pre-cast reinforced concrete M250 with a thickness of 12cm; the revetment foot is reinforced by 01 gabion of rubble stone with a dimension of (2.0x1.0x0.5)m.

- *Embankment top*: Combined with the management road of 5m wide which is consolidated by cast-in-place M250 concrete with a thickness of 18m, the lower layer is oil paper and stone layer 4x6 mixed with mortar M50 of 10cm thick,

- *Embankment roof (embankment body)*: Roof coefficient $m=1.5$, Reinforcement of the roof by precasted reinforced concrete M250 with a thickness of 12cm within the beam frame of cast in place RC M250, the lower layer is macadam layer of 10cm thick and geotextile. Follow the design in resident area, have 6 stair cases on the left route and 2 stair cases on the right route.

- *Embankment foot*: with 01 row of stone gabion with a dimension of (20x1.0x0.5)m.

(ii) *Input drainage culvert*: There are 03 existing input drainage culverts which are still in good condition. Only is extension of the culverts needed investing at position of K0+405.0 of the embankment of the left bank.

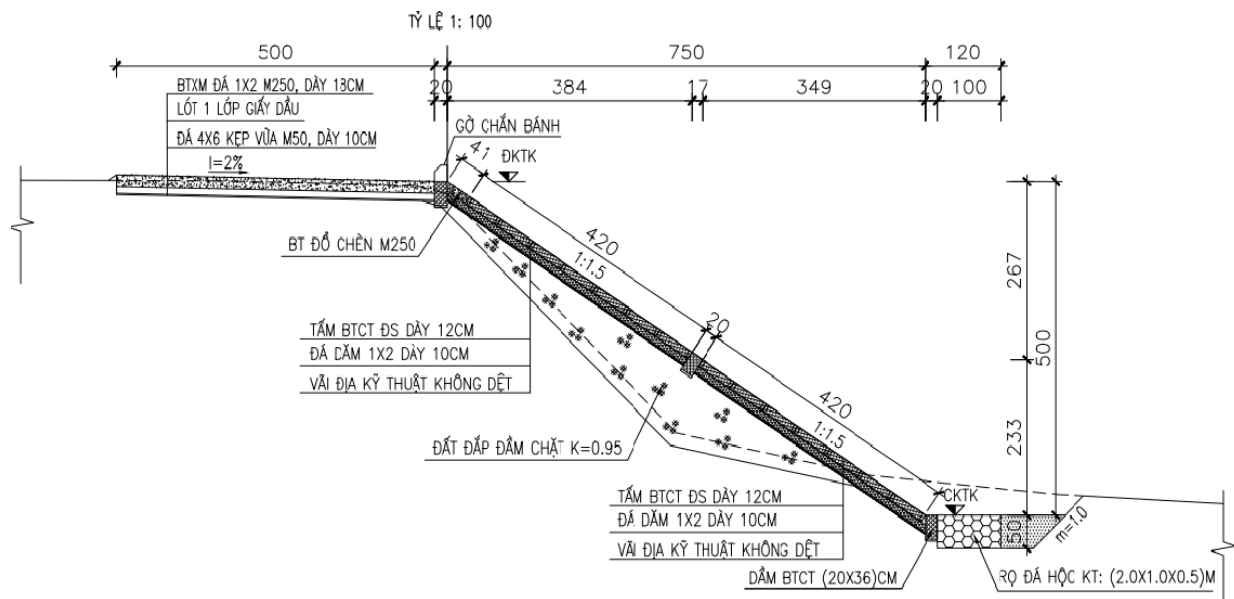


Figure 11: Cross section of Lu river embankment

3.3.3. Total Volume of Excavation and Back Filling

Table 2: Volume of Excavation and Back Filling

Activity	Excavation (m3)	Filling (m3)
Activity 1	1,725	500
Activity 2	3,669	924
Activity 3	19,614	33,412
Total	25,008	34,836

3.3.4 Construction Method

River branch often has a dry season flow. To facilitate the construction of embankment foot, construction of cofferdam to take entire flow into left branch of the river. This work should be done in dry season

The embankment foot is implemented first, then the embankment roof and finally the embankment top. The construction is carried out by the successive method.

3.3.5 Construction Material Supply

For Activities 1 and 3, it is confirmed that construction materials are provided by local suppliers such as ashlar stone in Deo Cau mining (distance 18 km), construction sand in Phuoc Son mining (distance 2 km). For Activity 2, construction materials are provided by local suppliers. As ashlar stone in Giap Lan mining (distance 8km), construction sand in Phuoc My mining (distance 23km).

These suppliers have been licensed by local government agencies. Other materials such as steel and cement will be bought from some suppliers in Phan Rang city. During implementation, if the subproject itself exploits construction materials such as stone, soil and sand, the subproject owner and contractors must strictly follow the GoV's environmental regulations on Environmental Assessment.

3.3.5 Disposal Sites

Due to the construction features of the embankment, the activities do not require much excavated material, mainly the topsoil used to backfill on the site as making the temporary road, leveling the ground, etc.

In the Phuoc Son, Ba Rau sites, the excavate material is small, used to make temporary roads, rectify a water line during construction time.

In the Song Lu site, the excavate material will transfer to disposal site in Hoa Thuy hamlet, Phuoc Hai commune, 7 km away from the project; Locate is valley area, few inhabitants and had a license from the local government.

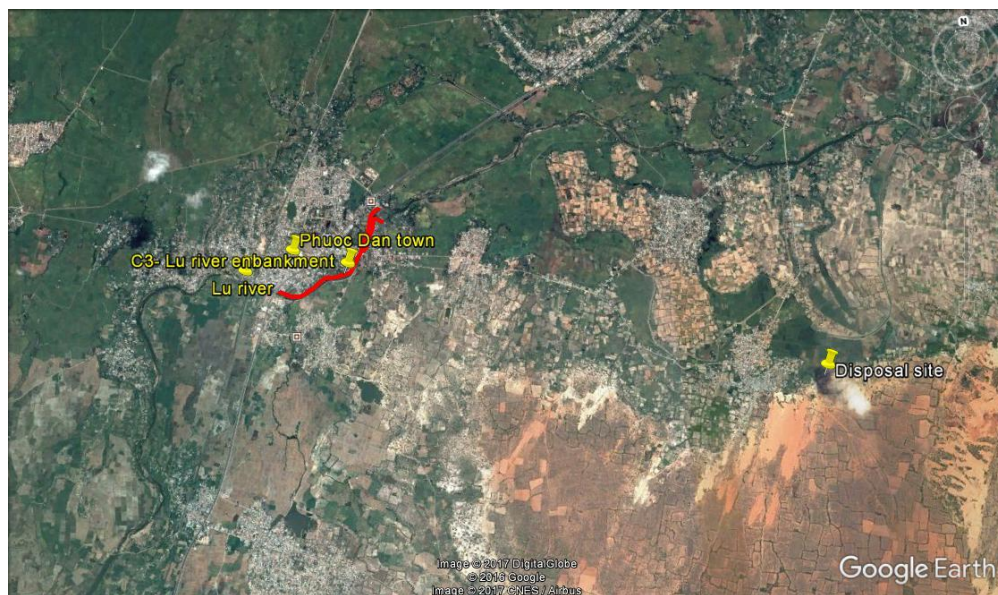


Figure 12. The disposal site of Song Lu embankment

CHAPTER 4. NATURAL, SOCIO-ECONOMIC AND ENVIRONMENTAL CONDITIONS

4.1. Natural conditions

Geographical location. Ninh Thuan province in the South Central Coast. It borders Khanh Hoa to the North, Binh Thuan province to the South, Lam Dong province to the West and East Sea to the East. The province has 3,358km² of natural area, 7 administrative units with 1 city and 6 districts. Phan Rang city – Thap Cham is the provincial-run city which is the political, economic and cultural center of the province.

Ninh Phuoc district is located in the South of Ninh Thuan province. Phuoc Dan town is the economic-political center of Ninh Phuoc district which is 8km to the Southwest away from Phan Rang city -Thap Cham. Phuoc Son is situated to the Northwest of Ninh Phuoc district which is 13 km away from the district center.

Thuan Bac district is the gate way of Ninh Thuan province and is about 20km far away from Phan Rang-Thap Cham city. Also, the district is the key economic area of South Khanh Hoa – North Ninh Thuan and has favorable geological positions and transportation system which is run through by 20km of NH1A and North-South railway and near Ba Ngoi sea, Ninh Chu port and Cam Ranh International Airport.

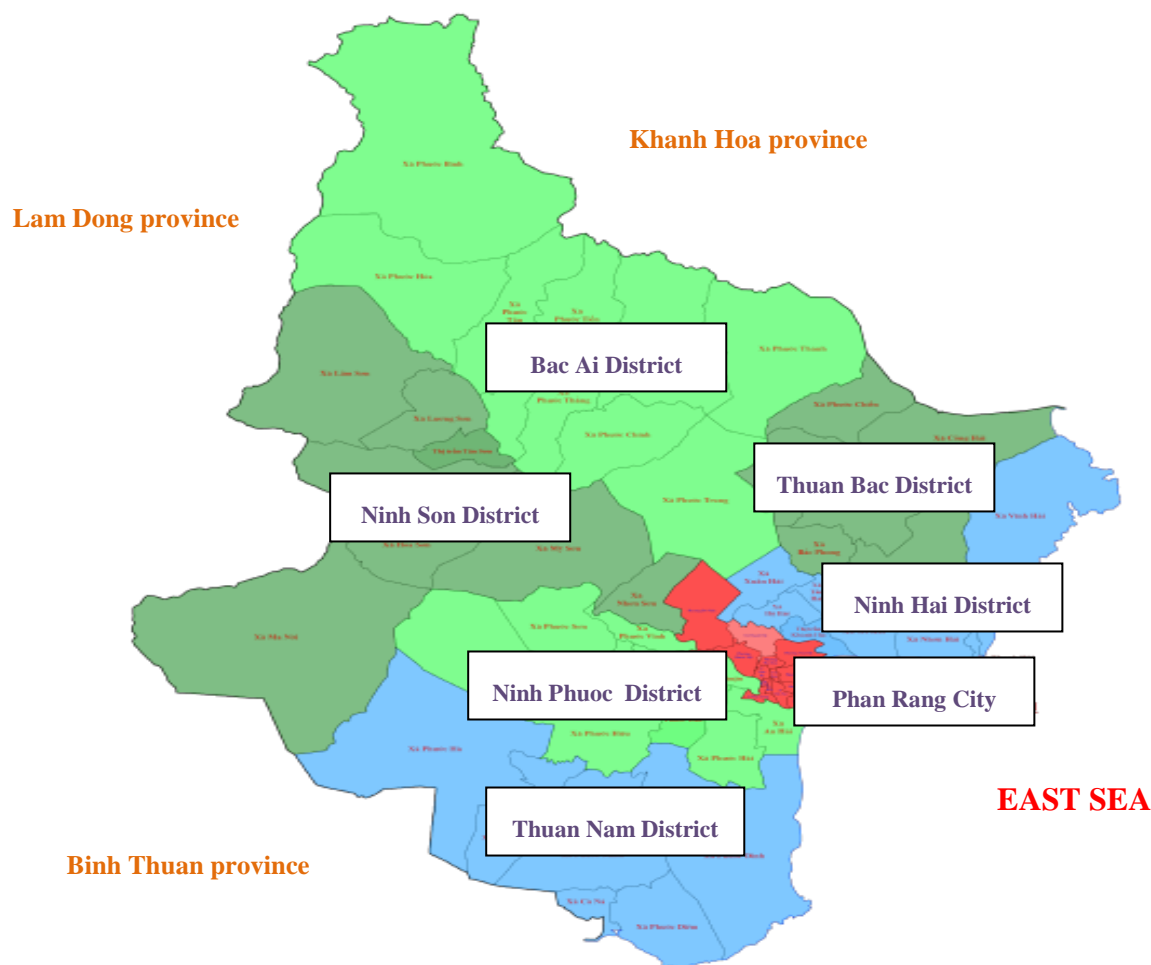


Figure 13: Administration map of Ninh Thuan province

Climate

Ninh Phuoc and Thuan Bac district is specialized by tropical monsoon climate with dry, hot, windy and strong evaporation weather. Annual average temperature, rainfall and air humidity is from 26-27⁰C, 800-900mm and 75-77%. The highest radiation energy is at 160 Kcl/cm². The climate is divided into 02 distinct reasons: rainy season is from September to November; drainage season is from December to the next September. The water sources in the region are distributed unevenly, mainly in the North area and near the center; the underground water source is 1/3 of national average level.

Rivers and lakes

Ninh Phuoc district: Cai Phan Rang river system (Dinh River) covers almost entire the district. Besides main flow of Cai river, there are many small and large tributaries of rivers and streams. There are Sat river, Cho Mo river, Ngang, etc stream to the left bank and Ong river, Cha river – Thanh river, Quao river and Lu river, etc to the right bank.

Lu river is a branch of Cai Phan Rang river with total 235 km² of basin area. The river is merged by 03 tributaries as Gia river, Bieu river and Tra Van river. From 2000 to date, 03 small and medium reservoirs as Tan Giang reservoir on Gia river, Bieu river reservoir on Bieu river basin and CK7 reservoir on the basin of Lu tributary have been built. On the drainage axis of Lu river with 17.2km for irrigation, tens of weirs for water self-flowing into fields have been erected. At the end of Lu river (at Te Nong Weir), Lu river is divided into 2 branches as Lu river 1 and Lu river 2.

Thuan Bac district

The river and stream system in the district is quite dense, but mainly small with high slope and there are some major stream and dams as Song Trau, Ba Chi, Ma Trai, Kien Kien lakes, Ba Ho weir and Ba Rau lake.

Ba Rau stream system straightforward flows into the sea; water flow rate is collected mainly in Ba Rau lake from the end of 2012 with capacity of 4.7 million m³. The completed works is for flood prevention, and restriction of deep flooding in downstream, especially residential areas in the North of Ba Thap village, Bac Phong commune, and supplying of water for Du Long industrial park and for agricultural production activities. However, households living along Ba Rau stream banks, the sections crossing Ba Rau village, Loi Hai commune will be affected.

In addition, there are some irrigation canals, streams, dams for agricultural production such as: Suoi Tien Dam cannal in Cong Hai commune (with total length of 454m, designed irrigation for 40ha), Suoi Bay Dam irrigation system in Cong Hai commune (total length of 1,356m, designed irrigation for 60ha), Ta Loc Dam canal in Bac Son commune (with total length of 3,019m, designed irrigation for 60ha), Ba Ro Dam canal in Bac Son commune (with total length of 1,050m, designed irrigation for 25ha), secondary and tertiary irrigation canal system of Song Trau lake in Cong Hai, Loi Hai, Bac Phong, Bac Son communes (with total length of 38,444m, designed irrigation for 1,861 ha). My Nhon pumping station system in Bac Phong commune with a length of 12,881m, designed irrigation for 203ha.

4.2. Socio-economic Conditions

Population and labors: Population of Ninh Thuan province is 590,400 people (in 2014), including 213,800 urban people (make up 36.2%) and 376,600 rural people (account for 63.80%). In comparison with the nation, the urban population rate of Ninh Thuan province is higher than that of the nation (urban population is at 29.6%). However, the province owns a high rate of rural population and a large number of ethnic minorities. Average population density

province wide is at 176 persons/km², in which there are 376 people/km² in Ninh Phuoc, 128 people/km² in Thuan Bac.

Ninh Phuoc district

In Ninh Phuoc district, activities are to build the protective embankment of Dinh river – section in Phuoc Son commune, and building embankment of Lu river bank to protect residential areas in Phuoc Dan town.

Ninh Phuoc district is located in the South of Ninh Thuan province. The district covers 1 town and 08 communes, including Phuoc Dan town, An Hai, Phuoc Hai, Phuoc Hau, Phuoc Huu, Phuoc Son, Phuoc Thai, Phuoc Thuan, Phuoc Vinh communes, with total natural area of 342.34 km². Population of the district in 2015 is 128,790 people with 69% of Kinh people, 30% of Cham people and 1% Raglai people.

Phuoc Dan town is an economic and political center of Ninh Phuoc district, about 8km far from Phan Rang city – Thap Cham to the Southwest. Total natural area is about 2,149.65 ha, including 1,443.65ha of arable land (rice field of more than 800ha). Population of entire town in 2016 is 6,850 households/28,549 members, including 30% of Cham people scattered in 15 areas.

Phuoc Son commune is situated to the North West of Ninh Phuoc district, about 13km away from the district center and 8km from Phan Rang city-Thap Cham. Total natural area of 1,432.12 ha (make up 4.18% natural area of the district). The population of the commune in 2015 (according to the District Yearbook) is 12,324 household members (make up 9.63% population district wide) with total 3,466 households on 6 villages: Ninh Quy 1, Ninh Quy 2, Ninh Quy 3, Phuoc Thien 1, Phuoc Thien 2 and Phuoc Thien 3 villages.

Table 3: Socio-economic data in Ninh Phuoc and Phuoc Son communes

No.	Socio-economic information	Value	
		Ninh Phuoc district	Phuoc Son commune
1	Total population (people) <i>In which:</i>	128,790	12,324
	- Ethnic minorities (Cham, Raglai)	38,637 (30%)	
	- Women	63,828 (49.56%)	6,106 (49.55%)
	- Working age	70,260 (54.6%)	6,909 (56%)
2	Poor households (HH)	4,623 hhs/18.654 members (13.66%)	429 hhs/1800 members (12.31%)
3	Per capita income	25,7 million dong/year	
3	Economic structure	46.15% agro-forestry and fisheries; 21.22% industry and construction, 32.64% services.	41.5% agro-forestry and fisheries; 34% industry and construction, 24.5% services.

Thuan Bac district

In Thuan Bac district, construction of embankment for Ba Rau stream banks to protect residential area in Ba Rau 1 and Ba Rau 2 villages.

Thuan Bac district is the gate way of the North of Ninh Thuan province. It is about 20km away from the center of Phan Rang city – Thap Cham and located in the key economic region of South Khanh Hoa – North Ninh Thuan. The province has a convenient geological position and transportation system which is crossed through by 20km NH1A and North-South railway, located near Ba Ngoi sea port, Ninh Chu port and Cam Ranh international Airport; Additionally,

the province is enjoyed favorable socio-economic connections to districts and cities both within the province and other regions and nationwide.

Total population of the district (as of the end of 2015): 41,342 persons/9,856 households, of which, 30.54% of Kinh people, 69.46% ethnic minorities (62.23% Raglai people, 7.23% Cham people). Annual afforestation in the district is more than 200ha. Total forest area in 2015 is 12,936 ha. The forest coverage ratio in 2014 reached 40.4%. In 2015, per capita income was 11.56 million dong, budget revenue of the province reached 29.3 billion dong. Statistically, total poor households in the end 2015: 3,767 households/17,478 people (make up 38.22%); number of near-poor households: 954 households/4,401 members (make up 9.68%). Thuan Bac district comprises of 06 communes/29 villages, of which there are particularly disadvantaged communes under the 135 programs (Bac Son, Phuoc Lhang, Phuoc Chien) and 02 particular disadvantaged villages of Loi Hai commune (An Dat, Suoi Da).

Loi Hai commune is a mountainous commune covering 06 villages: An Dat, Ba Rau 1, Ba Rau 2, Kien Kien 1, Kien Kien 2 and Suoi Da. The project area is in Ba Rau village, Loi Hai commune where mainly Raglai people live and do backward cultivation with poor infrastructures for agricultural development. Total food output in 2015 yielded 10,000 tones and commune budget revenue of 440,000,000 VND. The rate of households using hygienic water reaches 98% and households with hygienic toilet is at 50% and 5/6 villages have waste collection services. Ba Rau 1 village includes 637 households/3,185 members.

Households in the commune mainly work in agricultural production which depends entirely on the weather and breeding with conventional customs, and have par average people have low per capita food. In general, living standard in Loi Hai commune is still low, which is hard to make financial contributions, and they need supports from socio-economic organizations.

4.3. Natural disasters

Thuan Bac and Ninh Phuoc districts are specialized by natural conditions of the South Central Coast Region where the climate and topography are so complex. These districts are influenced by almost all types of natural disasters of Vietnam such as: storm, tropical depression, flooding, flashflood, riverbank erosion, hurricanes, thunderstorm, and drought. Of these natural disasters, the districts are frequently borne storms, heavy rain, flashflood, flooding and landslide as a result from rains and surface run-off, and drought caused by prolonged hot weather.

Storms: In Ninh Phuoc and Thuan Bac districts, storms occur in October and November, sometimes in the next January. The highest rainfall within 24 hours recorded is at 180mm, the risk of storms in the East Sea may affect the districts with the storm level at 12, 13; the strongest storm wind speed may reach 60-65m/s.

Flash floods: flash flood is mainly taken place in:

+ Thuan Bac district: Kien Kien 1, Kien Kien 2, Ba Rau 1, Ba Rau 2 villages, Loi Hai commune; Ba Thap village, Go San - Bac Phong commune; Phuoc Khang commune; Hiep Thanh village, Da stream – Cong Hai commune.

Floods and flooding: Floods and flooding are mainly encountered into by:

+ Ninh Phuoc district: Thuan Hoa, Phuoc Khanh, Phuoc Loi, Van Phuoc villages – Phuoc Thuan commune; Phuoc Thien 3 village, Ninh Quy 2 and 3 Phuoc Son commune; Thai Giao village, Hoai Ni – Phuoc Thai commune; street quarter 2, 5 and 6 in Phuoc Dan town; Tu Lam village, Thanh Tin – Phuoc Hai commune; Long Binh 1, 2 village, Hoa Thanh, An Thanh 1 and 2 – An Hai commune. Households along 2 Cai river side from Nha Trinh dam to the end of Cai river.

+ Thuan Bac district: Ba Thap, My Nhon villages – Bac Phong commune; Ba Rau 1 and 2 in Loi Hai commune; Suoi Gieng village in Cong Hai commune.

Landslide: Main landslide areas:

+ Road landslide: Road section to Binh Tien village in Cong Hai commune; Phuoc Chien – Phuoc Thanh section in Thuan Bac district.

+ Mountain and soil landslide: Da Liet, Cau Da villages in Phuoc Khang commune, Xom Bang, Lang Me in Bac Son commune, Phuoc Chien commune in Thuan district.

In addition, the province is frequently borne hurricane, thunderstorm, hot weather and drought.

River bank erosion: Due to extreme weather such as heavy rains leading to high flood, some sections of river and stream bank in the region have been seriously eroded. Annually, this phenomenon still happens and threatens food security and safety of people living along the river and stream.

4.4. Status of the Environment

The baseline data of status of the environment sourced from Environmental Status Report of Ninh Thuan province in period 2011-2015.

4.4.1. Water quality

(A) Quality of surface water

Water quality is stable through months within year, the variation is insignificant through years, mainly within the allowable standard. However, in 2015 the content of organic and nutrition pollution tends to highly increase and exceed allowable standard, especially in Bac canal of Phan Rang and Ninh Hai branches.

Surface water is contaminated with iron (Fe), most of the monitoring values exceed allowable standard QCVB 08-MT: 2015/BTNMT, column A2. Particularly, the canal section from Tuy Nong station (Phuoc Dan), Fe concentration is up to 3.9mg/L. Water in the lake, which is found no sign of pollution, is good for irrigation and domestic use. However, in rainy season, the water quality fails to meet the allowable standard for TSS. There is no intrusion of saline and brackish water at construction sites due to the elevation is from 17 to 19 meters above sea level.

(B) Underground water quality

Quality of underground water in the province is preliminarily evaluated through surveys of some wells in some areas. Analysis results show that the quality of underground water is good for domestic activities and irrigation.

(C) Quality of coastal sea water

Monitoring results indicate that the coastal sea water in almost all areas is contaminated with Fe and Coliform. In aquaculture areas, COD and TSS exceed allowable standards.

The coastal sea water is contaminated where most of monitored parameters are over allowable standard. The reason is that all desposals from aquaculture discharged into the sea. Coastal sea water in beaches and water sport area is polluted with organic substances and Fe which is released from entertainment activities in areas.

4.4.2. Air quality

Air quality monitoring results of the province shows that all parameters meet allowable standard; there is no sign of air pollution because of traffic, industrial and rural activities, tourism areas and fishing ports.

4.4.3. Soil quality

Urbanization and economic, industrial and agricultural production activities are influencing physical and chemical characteristics of soil in the province. Although the soil quality parameters are still within allowable limits, the rapid development of industrial and rural production in combination with dry weather will exacerbate the soil degradation and desertification.

4.4.4. Biological Resources

Flora system is mostly food crops, vegetable, fruit trees, bamboo and shrub. Fauna system is poor with some fish, shrimp, crab, snails. There is no occurrence of protected species in the subproject area.

4.4.5. Solid waste collection and treatment

Solid waste management in Ninh Thuan has been greatly invested and well controlled and managed. Solid waste collection is implemented by local villages, communes and districts. However, the collection is asynchronous without any solid classification at the source, which places the pressure on the waste collection and transportation. Additionally, concentrated solid waste treatment is small and far from districts in the province and that the State budget for solid waste management stays humble.

4.4.6. Existing land use and infrastructure along embankment section

Given location of embankment sections, the land is mostly residential land and agricultural land for development with food crops and fruit trees. Transport infrastructure is mostly rural roads 3.5 to 5 meters wide.

CHAPTER 5. ENVIRONMENTAL AND SOCIAL IMPACTS

5.1. Positive impacts

03 river bank embankment items in Loi Hai commune, Thuan Bac district and Phuoc Son commune, Phuoc Dan town, Ninh Phuoc district are to prevent river banks from landslide and to protect land as well as on-land structures, thereby, minimizing disaster-related damages, ensuring residential areas, safety, assets and long-term arable land of people living along the river, and contributing to protection of local basic infrastructures. At the same time, the revetments will make significant contribution to improvement of environmental landscape, transportation infrastructures and embankment system in the communes.

Economic efficiency

- Thanks to the Component 1, a high-voltage electrical post of 500kV through Dinh river at Phuoc Son commune will be protected. At the present, the sliding edge of the river bank is about 20m away from the electrical post. The Component, will keep safe for 2,961.81 ha of arable land in flooding area of Phuoc Son, including 2,313.46 ha rice, 553.95 ha cash crop, 114.4 ha grapes and apples, and 5.9ha shrimp and fish culture.
- The Component 2 is to prevent landslide, electricity cut and loss of cultivation land and to ensure the safety and assets for 637 households with 3,185 people in Ba Rau 1, Loi Hai commune where mainly Raglai people live along the river bank. Furthermore, the abutment at the end of the North-South railway bridge will be protected.
- Once the Subproject is completed, local people in Phuoc Son commune, Phuoc Dan town, Ninh Phuoc district and Loi Hai commune, Thuan Bac district will be provided with landslide protection, life stability and socio-economic development.

Social efficiency

- The area for construction of the 03 items mainly is agricultural production land and fertile coastal land. However, agricultural land is increasingly encroached as a result from landslide. Therefore, the works will contribute to ensuring production land, people's life and production.
- Creation of beautiful landscape along river bank, trade promotion and entertainment for local people, increase in job opportunities and income.
- The Component of revetment for landslide prevention in Ba Rau residential area will closely link to the the Government and Donor funded projects such as Ba Rau Reservior Project, rural roads project in Loi Hai commune.
- Reduction of sand and gravel exploitation along Dinh river bank in Phuoc Son commune. During the revetment construction, vehicles for transportation of sand and soil from the riverbed to banks will be restricted.
- The “*Vietnam Emergency Flood Disaster Reconstruction Project – Ninh Thuan Subproject*” will make contributions to landscape beauty, production stability and life subsistence for people along the river banks. It will be a base for the rural agriculture modernization which speeds up the economic development of Ninh Phuoc and Thuan Bac district, Ninh Thuan province.

5.2. Potential negative impacts

In the course of the Subproject implementation, negative impacts on socio-economic and environmental conditions may be incurred. Major impacts are mainly in pre-construction and

construction phases (from 6-12 months, upon types of work) and the impact level is not significant that can take suitable measures for prevention and mitigation. The activities under the Subproject are divided into 03 main phases with different impact levels.

5.2.1. Pre-construction Impacts

Main impact during pre-construction phase is land acquisition and site clearance.

a) Land Acquisition

The subproject will affect 28,207 m² of land in Lợi Hai, Phuoc Son commune and Phuoc Dan town, of which residential land: 837 m², garden land: 10,921 m², agricultural land: 10,849 m², and Public land: 5,600 m² (managed by commune/ward PCs, including specialized land, stream, river land, transport land and so on). Land areas to be acquired for each work item are listed in the Table 3 below.

Table 4: Impact Magnitude of Land Acquisition

No.	Items	IMPACTS FROM LAND ACQUISITION				Total (m2)
		Residential land (m2)	Garden land (m2)	Agricultural land (m2)	Public land (m2)	
1	Construction of Dinh river embankment in Phuoc Son commune, Ninh Phuoc District.	145	5671	3,949	600	10,365
2	Construction of an embankment for protection of Ba Rau residential area in Thuan Bac district	342	1500	4,050	500	6,392
3	Construction of an embankment for protection of 02 Lu river banks in Ninh Phuoc district	350	3750	2850	4,500	11,450
	TOTAL	837	10,921	10,849	5,600	28,207

Land acquisition will affect 165 households directly by physical land taking and 02 households in Phuoc Son commune are indirectly affected by economic loss of cultivations on land being managed by Commune People's Committee. 693 people are affected by land acquisition.

Table 5: Number of AH by the Subproject's items

No.	Items	Direct AHs	Indirect AHs	Affected CPC
1	Construction of Dinh river embankment in Phuoc Son commune, Ninh Phuoc District.	28	2	1
2	Construction of an embankment for protection of Ba Rau residential area in Thuan Bac district	63	0	1
3	Construction of an embankment for protection of 02 Lu river banks in Ninh	74	0	1

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	Phuoc district			
	Total	165	2	3

Source: Results of Resettlement Survey, 03/2017

In total, 83 AHs will be affected by partial loss of residential land, none of them are required to relocate. Out of 165 affected households, there are 68 ethnic minority households in Loi Hai commune of Thuan Bac district and Phuoc Dan town². The number of affected households and organizations are summarized in the following Table:

Table 6: Summary of Impacts magnitude of the Subproject

Contents	Unit	Affected volume
Total number of affected households	HHs	165
Household members	Person	693
1. Households are directly affected by land acquisition	HHs	163
<i>In which:</i>		
+ Households are affected with partially residential land	HHs	83
+ Households are affected with partially garden land	HHs	146
+ Households are affected with agricultural land	HHs	109
2. Number of affected agencies, organizations		
- Communes/wards People's Committee		3
3. Number of households are affected with structures	HHs	60
4. Number of households are affected with cash crops and trees	HHs	111
5. Number of displaced households	HHs	0
6. Number of vulnerable households	HHs	85
<i>In which:</i>		
+ EM households	HHs	68
+ Poor households (including poor households are ethnic minority people)	HHs	75
+ Policy households	HHs	5
+ Elderly households	HHs	1
+ Households with woman-headed with independents	HHs	4
7. Households are affected 20% or more of total agricultural land area (Vulnerable households affected 10% or more of total agricultural land area)	HHs	36
8. Number of households are affected by loss of business	HHs	0

Source: Results of Resettlement Survey, June 2017**d) Environmental and Social Impacts related to site clearance**

The number of workers limited, no camp set up in this phase, households may do themselves, etc. thus wastewater, noise, social disturbance by workers should be negligible.

² A separated EMDP will be prepared for this Subproject

Dust emission. Demolition of the existing structures would generate dust. The existing residential areas located downwind along three construction sites in Ba Rau area; quarter 2, quarter 5 and quarter 13 in Phuoc Dan town. However, dust emission from demolition happens in a short time (around 3 weeks) and the volume of demolition is small. For each site, about 20 households are affected with demolition of structures, so the impact is low.

Exhaust emission. Use of equipment such as excavator, sawmill, lawnmower and vehicle trucks for demolition, cutting down trees, grass clearance, and transportation of debris to disposal sites, would cause exhaust emission such as SO₂, Particulate Matter, NO_x, CO and VOC. These waste gases may cause impact on workers and local people in 3 construction sites, special at Ba Rau and Phuoc Dan residential areas. However, the period of site clearing is short (about 3 weeks) and consumption of fuel is low, so the impact is low.

Solid waste generation. Total amount of solid waste from demolition is not high because the 3 construction site areas are river sides without houses and poor flora system. Besides, there is small amount of domestic waste generated from worker activities, about 10 kg/day (04 workers x 0.3 x 0.8 kg/worker/day). If domestic waste is not properly managed, it would cause generation of unpleasant odor, aesthetic problem, and create habitats for rats, cockroaches, and flies as vector-borne diseases and affect local people and worker health. However, the amount is not very large and domestic waste will be daily collected and transported to Loi Hai, and Phuoc Dan disposal site, so the impact is considered low.

Accident risks. Site clearing activities might cause accident risks to workers and local people due to operation of equipment and machineries, transportation, falling and collapse from demolition process and cutting down trees. However, the volume of work is not large and the impact is manageable through good construction practices. Thus, the impact is considered low.

Bio diversity

Flora system of three construction sites is poor with mostly shrubs, bamboos, fruit trees as longan, grapefruit, banana, etc. The preparation of the site will require clearance of some vegetation, 1149 fruits, timber trees and others. Regarding fauna system, construction activities in three activities on dry season, the Ba Rau stream, Lu river has no flowing water, and have not impact on freshwater ecosystem. In the Dinh River area, under the embankment, the flow is not great, the freshwater ecosystems are poor and common, such as fish, shrimp, crab and snail frogs, etc. There is no occurrence of protected species in the subproject areas.

(e) Safety Risks related to UXO

The embankment will be implemented on mainly agricultural land and small residential land area. According to interview with local people and the local government, detection of mine had been conducted for this area before. However, to ensure safety for the clearance and construction, the project arrange for UXO clearance for the entire project area by specialized units of the Army Demining Team in the province.

5.2.3. Impacts during construction

During construction phase, dusts would be generated from levelling and excavation activities, transportation of construction materials and wastes.

(a) Dust emission from leveling

Emission factor of dust from 1 m³ of leveling material such as sand, soil is 0.062kg. At three construction sites, total excavated dry soil to be removed is 836,017 m³, in which Lu river construction site accounts for 70% of total emission. Estimated time of leveling work is 6 months/each site, working 30 days/month and 8 hours/day. Dust emission rate is (836,017)

$0.062/(6 \times 3 \times 30 \times 8) = 0.01199$ kg/hour. According to the documents on air pollution in construction, TSP accounts for approx. 10% of dust emission corresponding value is 0.01199 kg/hour. Dust generated by leveling occurs about 6 months, affecting mainly to workers and local people. The impact is considered moderate.

(b) Dust and exhaust emission from excavated material transportation for leveling

Dust: transportation includes spoil removing out of the construction site, soil and sand transportation from mines to the site for leveling shall generate dust from road surface.

To remove 836,017 m³ of spoil, sand and soil, the trucks 10ton shall be used. Estimated time of leveling work is 6 months/each site, working 30 days/month and 8 hours/day. Number of transportation trips is $(836,017 \text{ m}^3)/(10 \times 6 \times 3 \times 30) = 152$ trips/day and the emission rate shall be 0.016g/m.s. With the calculated value and compared to the QCVN 05:2013/BTNMT, the level of dust generation by the transportation activities is lower than the permissible threshold.

Table 7: Dust emission from material transportation for leveling

Distance (m)	1	5	10	50	100
Concentration (mg/m ³)	0.2271	0.0031	0.0016	0.0005	0.0003
QCVN 05:2013/BTNMT (mg/m ³)	0.3				

Exhaust emission: The trucks used to transport the spoil from construction sites, sand from the mine, use the diesel engine so their operation will generate fumes containing the components that pollute the air environment include: dust, SO₂, NO_x, CO, volatile organic compounds (VOC), ... Number of transportation trips as calculated above is 152 trips/day, and transport distance for one trip is 10 km. Fuel consumption norms of 10 tons truck types is from approximately 0.002 to 0.003 tons diesel/10 km; such fuel consumption is about: 0.773 to 0.927 tons of diesel/day. TSP emissions rate is approximate 3.3 - 3.9 kg/day; SO₂ 0.008-0.009 kg/day; NO_x 42.4 - 50.0 kg/day; CO 21.6 - 25.9 kg/day; VOC 9.2 - 11.1 kg/day. Exhaust emission will affect workers and local people living near construction site. Since the period of leveling is about 6 months, the impact is moderate.

(c) Dust and exhaust emission from construction material transportation

Dust: The volume of construction materials such as sand, stone, cement, brick, steel, paint for the works is estimated about 700 tons/3 sites. Period of construction is about 18 months/3site, using 10 tons vehicle truck type, number of transportation is: $700 \times / (10 \times 18 \times 30) = 13$ trips/day. Emission rate will be 0.001 g/m.s. In comparison with the result of dust emission by leveling it shows that this value is less than 8 times so dust emission rate is small.

Exhaust emission: Number of transportation as calculated above is 13 trips/day, and transport distance for one trip is 10 km. Fuel consumption norms of 10 tons truck types ranges from 0.002 to 0.003 tons diesel/10 km so fuel consumption is about: 0.06 to 0.072 tons of diesel/day. TSP emission rate is approximate 0.258-0.310 kg/day; SO₂ 0.0006-0.0007 kg/day; NO_x 0.0006-0.0007 kg/day; CO 1.680-2.016 kg/day; VOC 0.720-0.864 1 kg/day. Exhaust emission will affect workers and local people living near construction site. Since the period of transportation is about 6 months for each site, the impact is low.

This emission would mostly impact on households living along transportation routes and near construction sites. Some sensitive receptors are identified such as the pagoda and school located near construction site of Lu river bank embankment.

(d) Wastes generation

Wastewater: The estimated number of workers and security guards are 100 persons for three construction sites. According to TCVN 4474-87, domestic wastewater generated in the field is 40 liters/person/day and total volume is $100 \times 40 = 4.00 \text{ m}^3/\text{day}$. Besides, about $4 \text{ m}^3/\text{day}$ of wastewater is generated from washing/cleaning concrete mixer/pump, bricklayer tool; concrete maintenance sprinkle; tire washing before leaving site. Construction wastewater has a high TSS content and sometimes contains oil. The impact is considered low.

Domestic solid waste: As per the statistics data and construction planning projects approved by MONRE, domestic solid waste per Ninh Thuan area is 0.5 kg/person/day. Therefore, with the number of 100 workers the volume of waste generation is $0.5 \times 100 = 50 \text{ kg/day}$. Total waste generated throughout construction period is 9,000 kg. Without proper management, such amounts of generated domestic waste would become a pollutant source, giving rise to bad smells and pathogenic factors from microorganisms. However, the amount of this domestic waste is not large, and local environmental service company will be contracted for collection and transportation of the waste to local disposal site. The impact is considered low.

Construction solid waste: About 118,354 tons of construction materials shall be used so it probably generates the construction debris such as rubble, sand, stone, concrete... and scrap such as leftover steel, emptied cement bags, cartons, and plastic. Without proper collection and recycling, these would have negative on the environment and be wasteful. This type of waste is composed of inert and non-toxic substances. In practice, excavated materials from embankments can be re-used for tree planting or levelling low areas. The impact is considered low.

Waste Oil: According to the circular no. 36/2015/TT-BTNMT, waste oil is defined as hazardous waste (code: 17 02 03). Estimate of construction machine on site: 15 construction machineries/day. Estimate of generated waste oil: 15-40 litres/month. Waste oil is generated from vehicle machine maintenance. Without appropriate management, these types of construction waste would have negative impacts on the soil, water, and air environment; residual grease and oil in containers can penetrate into the ground, causing soil pollution. However, in practice vehicle maintenance is carried out in workshop, only urgent repair is carried out on-site, thus the amount of waste oil generated on-site is expected to be small. The impact is considered moderate.

(e) Noise impact

Noise from operation of construction equipment and machineries shall affect workers and local people living near construction sites and along transportation route Ba Rau, AH 1 road and local road in Phuoc Dan town. For each work item, the resonant noise level will be estimated from separate noise level of the machines and equipment. The distance for noise impact assessment on the surrounding residential areas is selected from 20m - 50m. The results of separate noise level assessment of individual construction and transport vehicles as well as resonant noise level are calculated.

Table 8: Noise level from construction vehicles

No.	Vehicles/Equipment	Noise 1m far from the source (dBA)		Noise level 20m far from the source	Noise level 50m far from the source
		Variation	Average		
01	Bulldozer		93.0	67.0	59.0
02	Roller	72.0 - 74.0	73.0	47.0	39.0
03	Excavator	72.0 - 84.0	78.0	52.0	44.0

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No.	Vehicles/Equipment	Noise 1m far from the source (dBA)		Noise level 20m far from the source	Noise level 50m far from the source
		Variation	Average		
04	Land scrapers	80.0 - 93.0	86.5	60.5	52.5
05	Road paving	87.0 - 88.5	87.7	61.7	53.7
06	Truck	82.0 - 94.0	88.0	62.0	54.0
07	Concrete mixer	75.0 - 88.0	81.5	55.5	47.5
08	Resonant noise level		84.5	58.5	50.5
	QCVN 26/2010/BTNMT – National Technical Regulation on Noise <ul style="list-style-type: none"> - Common areas: 70 dBA (between 6 a.m. and 9 p.m.); 55 dBA (between 9 p.m. and 6 a.m.) - Special areas: 55 dBA (between 6 a.m. and 9 p.m.); 45 dBA (between 9 p.m. and 6 a.m.) WBG EHS Guidelines: <ul style="list-style-type: none"> - Residential, Institutional, Education): 55 dBA (Daytime : 7h-22h); 45 dBA (Nighttime: 22h – 7h) - Industrial, commercial: 70 dBA (Daytime : 7h-22h); 70 dBA (Nighttime: 22h – 7h) 				

The results showed that, at the distance of 20 meters from the sources of noise, the noise levels from vehicles are all within the allowable limits of QCVN 26:2010/BTNMT and the standards of the Ministry of Health. The distance from nearest house to construction site is 5 meters. Workers who operate machineries and equipment and others work on site and local people will be affected. The level impact is moderate.

(f) Vibration impact³

There are three primary types of receptors that can be adversely affected by ground vibration: people, structures, and equipment. Ground vibration can be annoying to people. The primary effect of perceptible vibration is often a concern. However, secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Vibration generated by construction activity has the potential to damage structures. This damage could be structural damage,

Construction equipment and machineries to be used may include pile drivers, rammers, bulldozers, and heavy trucks. At a distance of 7.62 m, vibration from pile drivers is 112 dB, rammer 94 dB, pile driving hammer 87 dB, big bulldozer 87 dB, driller 87 dB, heavy truck 86 dB, drilling hammer 79 dB and small bulldozer 58 dB (D.J. Martin. 1980, J.F. Wiss.1974, J.F. Wiss. 1967, David A. Towers. 1995). The safe distance for bearing strong impacts from vibration is about 10 meters from the generating source. Since the residential area is located along river side, next to road– transportation route, about 5 meters far from construction sites, it will be mainly affected by vibration from movement of heavy trucks. The impact is considered moderate.

(g) Safety risks

Labor accidents. In general, labor accidents may happen at any stage during construction phase, the causes include:

³ QCVN 27:2010/BTNMT – National Technical Regulation on Vibration

- Common areas: 75 dB (between 6 a.m. and 9 p.m.); background level (between 9 p.m. and 6 a.m.)
- Special areas: 75 dB (between 6 a.m. and 6 p.m.); background level (between 6 p.m. and 6 a.m.)

- Accidents caused by the operations of vehicles, construction machines and equipment for the installation, construction and transport of materials.
- Drown in water when working on or near water bodies
- Accidents related to landslide, soil subsidence that may happen during dredging/excavation.

Environmental Hazard: Fire, explosion and fuel/chemical leakage risks. Fire and explosion may occur during the transportation, storage, handling or usage of fuel, gas, electricity etc. causing the loss of life and damage to property .

As the storage and usage of chemical, fuel and gas at the construction site would be very limited, the impact level is considered moderate.

Community Health and Safety Risk. Construction activities may result in a significant increase in movement of heavy vehicles for the transport of construction materials and equipment increasing the risk of traffic-related accidents and injuries to local communities. Since there are households living along the transportation route in the proximity of construction site, traffic accident may happen. The incidence of road accidents involving project vehicles during construction should be minimized through a combination of education and awareness-raising. Increased incidence of communicable and vector-borne diseases attributable to construction activities represents a potentially serious health threat to the subproject personnel and residents of local communities. Communicable diseases pose a significant public health threat worldwide. Health hazards typically associated with activities are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labor mobility are sexually-transmitted diseases (STDs), such as HIV/AIDS.

Since the construction period is 6 months and the number of workers is about 100 workers, the impact is considered low.

(h) Impact on traffic and traffic safety

10 tons truck shall be used during construction to transport construction waste and materials. Numbers of transportation trips are about 152 trips/day/3 sites for leveling. During construction, it is 13 trips/day. The operation of these trucks will increase the density of traffic, impede/affect the traffic of local people, causing damage to roads and traffic congestion and possible traffic accidents if not following traffic law and having proper transportation and traffic arrangement. Traffic on transportation routes especially riverside roads will be affected. Given that the period of construction is about 6 months each site, the impact is considered moderate.

(i) Impacts due to influx of worker in the subproject area





The construction activities require a labour force about 100 workers for three construction sites, approximate 30 workers at each site. Thus, the number of workers coming and stay in subproject area during construction phase is small compared with local population. The main potential social problems associated with worker influx could be: (i) potential impact of spreading infectious disease from employees to local communities and vice versa; (ii) potential impact of prostitution, drugs and gambling; (iii) potential conflict between workers and local communities because of differences of culture, behavior; and (iv) sexual abuse and assault of girls due to influx of workers employed by the construction company in the area. Given that the construction period is about 6 months each site, the impact is considered low and manageable.

(j) Impacts of Physical Cultural Heritages

The excavation activities may find PCRs under the ground. However, these construction sites are riverside with long-time cultivation activities. These areas have been studied and confirmed that they are not archaeological sites so probability of chance finding of significant PCRs is very low.





5.2.4 Site-specific impacts during construction

Table 9: Site-specific impacts during construction

No.	Sensitive receptors and their relation to subproject activity	Potential impacts	Impact level
Construction site 1	 <p>Transmission Line 500 kV across construction site</p>	<p>Construction activities may pose damage to the transmission line due to short-circuit by operation of cranes and concrete-ready pump trucks close to the transmission line i.e. within safety corridor of the transmission line.</p> <p>Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into close proximity with overhead wires can result in arcing between the wires and the object, without actual contact.</p> <p>Workers working within safety corridor may be affected by magnetic field or electric shock, i.e. at a distance less than 7 meters from the transmission line.</p>	M
Construction site 1	 <p>The fruit garden along river bank eroded of the construction site</p>	Construction activities will cause limited access and damage to fruit garden and thus it leads to loss or reduction in income from trading of fruit	M
Construction site 1	 <p>The vegetable field along river bank eroded of the construction site</p>	Construction activities will cause limited access and damage to vegetable field and thus it leads to loss or reduction in income from trading of vegetable	M
Construction site 2		<p>Construction activities may cause:</p> <ul style="list-style-type: none"> - Erosion of the railway bridge foundation - Water pollution due to construction materials and wastes 	L





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No.	Sensitive receptors and their relation to subproject activity	Potential impacts	Impact level
	The train bridge across construction site	- Potential accident risk to workers	
Construction site 2	 <p>Local electric transmission Line across construction site/Construction materials from river bed</p>	<ul style="list-style-type: none"> - Construction activities may pose damage to the transmission line due to short-circuit by operation of cranes and concrete-ready pump trucks close to the transmission line i.e. within safety corridor of the transmission line. - Workers working within safety corridor may be affected by magnetic field or electric shock, i.e. at a distance less than 6 meters from the transmission line. - Illegal exploitation of construction materials from river bed 	M
Construction site 2	 <p>The local residents living beside construction site</p>	<ul style="list-style-type: none"> -Affect the daily routine of the local people, house structure and landscape - Affect the ambient environment of residents such as noise, dust. 	
Construction site 2	 <p>The Ba Rau bridge across construction site with deep water</p>	<p>Construction activities may cause</p> <ul style="list-style-type: none"> - Erosion of Ba Rau bridge foundations - Potential risk of drowning 	M
Construction site 2	 <p>The road-combined</p>	<ul style="list-style-type: none"> - Affecting public transport during construction - Causing damage to spillway due to use of heavy vehicle trucks and construction machineries - Causing potential risk of traffic accidents - Causing downstream water pollution due to washing vehicle and machineries if any 	M

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No.	Sensitive receptors and their relation to subproject activity	Potential impacts	Impact level
	spillway across the Ba Rau stream of construction site		
Construction site 3	 <p>The existing drainage canal and wastewater from local area to construction site</p>	<ul style="list-style-type: none"> - Construction activities may cause blocking of water flows due to sedimentation and disposal of construction spoils and wastes. - Worker's health might be affected by unpleasant odor and mosquitoes from the canal if worker's camps located near to the canal, i.e. less than 20 meters far from the canal. 	M
Construction site 3	 <p>The access road to construction site</p>	<ul style="list-style-type: none"> - Transportation of construction material and construction wastes would cause (i) damage of the road, (ii) dust, exhaust emission, noise and vibration impacts on residents living along both sides of the road, and (iii) traffic accident risks and congestion. - Construction activities can affect residents living along both sides of the road. 	M
Construction site 3	 <p>The Long Qui pagoda beside construction site</p>	<p>Construction activities may cause:</p> <ul style="list-style-type: none"> - Impacts on the spiritual activity of local residents due to noise and traffic congestion - Potential damage to the pagoda due to dust and vibration 	M
Construction site 3	 <p>Phu Quy I primary school near construction site</p>	<p>Construction activities may cause:</p> <ul style="list-style-type: none"> - Impacts on the health of students and teachers due to dust and exhaust emission, and noise. - Potential accident risk to students and their parents, and teachers due to movement of vehicle trucks 	M

Note: Impact level: H- high, M-Moderate, L-Low; Construction site 1: The Dinh river embankment in Phuong Son commune, Ninh Phuoc district; Construction site 2: The embankment for protection of Ba Rau residential area in Thuan Bac district; Construction site 3: The embankment for protection of 02 Lu river banks in Ninh Phuoc district

5.2.5. Potential negative impacts during operation

During operation, the subproject is not envisaged to cause negative impacts due to generating wastes by itself. The subproject would mainly bring positive impacts as its objectives. The negative impact is envisaged to be connected to erosion due to change of water flow regime.

CHAPTER 6. MITIGATION MEASURES FOR POTENTIAL NEGATIVE IMPACTS**6.1. Measures to Minise the Impacts of Land Acquisition**

The Project has developed Resettlement Action Plan (RAP) to address the potential impacts related to land acquisition. The key contents of the RAP are summarised below.

6.1.1. General principles

All projects Affected Households (AHs) who have assets within or reside within the area of project land-take before the cut-off date are entitled to compensation for their losses. Those who have lost their income and/or livelihood will be eligible for livelihood rehabilitation assistance based on the criteria of eligibility defined by the project in consultation with the AHs. If, by the end of the project, livelihoods have been shown not to be restored to pre-project levels, additional assistance measures will be provided, more information descript in Ninh Thuan RAP.

6.1.2. Entitlements

AHs will be entitled to the compensation, assistance and resettlement policy (if any) in accordance with the regulations of Vietnam and the World Bank OP 4.12. AHs will not be considered for compensation or support from the project for the area to be occupied after the cut-off date announcement.

Compensations will be made to households affected with land acquisition. The total budget is presented in the Table below:

Table 10: Estimated Cost for Compensation for Land Acquisition

Location	Decision No. 10/2017 (QĐ – UBND dated 06/02/2017) (VND)	Proposed price (VND)
Thuan Bac and Phuoc Son districts	Facade land with 3-5m wide concrete road surface in hamlets: price is 85,000 ÷ 155,000 VND/m2	155,000 VND/m2
Ninh Phuoc district	Facade land with 3-5m wide concrete road surface in hamlets: price is 180,000 ÷ 250,000 VND/m2	250,000 VND/m2

Source: RAP report

Mitigation measures for UXO clearance impact

UXO clearnce shall be implemented prior to land acquisition. This work will be carried out by specialized demining units of the Army in the province. The subproject owner and specialized demining units will have to inform the local residents at least one month prior to the clearance and must use protective barriers and warning signs in order to reduce risk for people and livestock. The demining unit and the universit will appoint staff responsible for guiding to local people not entering the UXO clearance area. UXO clearance will comply with Circular 146/2007/TT-MOD of Ministry of Defence of the Government of Vietnam.

6.2. Mitigation measures for generic construction-related impacts

Mitigation measures have been developed based on *WBG EHS Guidelines and National Regulations and Standards* to address the generic construction-related impacts, and presented in the form of Environmental Codes of Practice (ECOP). The ECOP describes typical requirements to be undertaken by Contractors and supervised by the Construction Supervision Consultant (CSC) during construction. The ECOP will be a reference for preparation of ESHS requirements under Section VII – Works' Requirements of SPDs. The ECOP addresses the followings which would connect with ESHS issues.

- Dust and exhaust emission
- Noise and vibration impacts
- Management of wastes
- Management of hazardous materials
- Workers' camp management
- Disruption of vegetative cover and ecological resources
- Soil erosion
- Drainage and sediment control
- Management of stockpiles and borrow pits
- Traffic safety management
- Interruption to the existing service infrastructures
- Chance Find Procedures or Discoveries
- Occupational Health and Safety
- Community Health and Safety
- Communication with local communities

Table 11: Environmental Codes of Practice (ECOP) for Addressing Generic Construction-Related Impacts

Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
Dust and exhaust emission	<ul style="list-style-type: none"> - The Contractor is responsible for compliance with relevant Vietnamese legislation with respect to ambient air quality. - Minimizing dust from material handling sources, such as conveyors and bins, by using covers and/or control equipment (water suppression, bag house, or cyclone) - Minimizing dust from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content - Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements - Selectively removing potential hazardous air pollutants, such as asbestos, from existing infrastructure prior to demolition - The Contractor shall ensure that the generation of dust is minimized and is not perceived as a nuisance by local residents and shall implement a dust control plan to maintain a safe working environment and minimize disturbances for surrounding residential areas/dwellings - Material loads shall be suitably covered and secured during transportation to prevent the scattering of soil, sand, materials, or dust - All vehicles shall comply with Vietnamese regulations controlling allowable emission limits of exhaust gases 	<ul style="list-style-type: none"> - TCVN 6438-2005: Road vehicles - Maximum permitted emission limits of exhaust gas - Decision No. 35/2005/QD-BGTVT on inspection of quality, technical safety and environmental protection - QCVN 05: 2013/MONRE: <i>National technical regulation on ambient air quality</i> - WBG EHS Guidelines 	Contractor	PPMU, CSC

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
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	<ul style="list-style-type: none"> - Vehicles should be maintained in accordance with manufacturers specifications - Vehicles in Vietnam shall undergo a regular emissions check and get certified named: “Certificate of conformity from inspection of quality, technical safety and environmental protection” following Decision No. 35/2005/QD-BGTVT - There shall strictly be no burning of solid wastes or construction materials (e.g. wood, rubber, oil-based rag, emptied cement bags, paper, plastic, bitumen, etc.) on site 			
Noise and vibration impacts	<ul style="list-style-type: none"> - The contractor is responsible for compliance with the relevant Vietnamese legislation with respect to noise and vibration - Planning activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance - Vehicles should be maintained in accordance with manufacturers’ specifications - Other measures to reduce noise to acceptable levels shall be implemented, including: <ul style="list-style-type: none"> + Selecting equipment with lower sound power levels + Installing silencers for fans + Installing suitable mufflers on engine exhausts and compressor components + Installing acoustic enclosures for equipment casing radiating noise 	<ul style="list-style-type: none"> - QCVN 26:2010/BTNMT: National technical regulation on noise - QCVN 27:2010/BTNMT: National technical regulation on vibration - WBG EHS Guidelines 	Contractor	PPMU, CSC

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	<ul style="list-style-type: none"> + Installing acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m2 in order to minimize the transmission of sound through the barrier + Barriers should be located as close to the source or to the receptor location to be effective + Installing vibration isolation for mechanical equipment + Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas + Re-locating noise sources to less sensitive areas to take advantage of distance and shielding + Siting permanent facilities away from community areas if possible + Taking advantage of the natural topography as a noise buffer during facility design + Reducing project traffic routing through community areas wherever possible + Developing a mechanism to record and respond to complaints 			
Management of wastes	<p>I. General Wastes</p> <p>(a) Wastewater</p> <ul style="list-style-type: none"> - The Contractor shall be responsible for compliance with the relevant Vietnamese regulations on wastewater discharges into surroundings - Consider hiring local workers to reduce wastewater generation on 	<ul style="list-style-type: none"> - QCVN 14:2008/BTNMT: National technical regulation on domestic wastewater - QCVN 40: 2011/ BTNMT: National 	Contractor	PPMU, CSC

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	<p>site</p> <ul style="list-style-type: none">- Septic systems shall be provided for treatment and disposal of domestic sanitary sewage in areas with no sewerage collection networks. Septic systems should only be used for treatment of sanitary sewage. When septic systems are the selected form of wastewater disposal and treatment, they should be:<ul style="list-style-type: none">• Properly designed and installed in accordance with local regulations and guidance to prevent any hazard to public health or contamination of land, surface or groundwater• Well maintained to allow effective operation• Installed in areas with sufficient soil percolation for the design wastewater loading rate• Installed in areas of stable soils that are nearly level, well drained, and permeable, with enough separation between the drain field and the groundwater table or other receiving waters- Wastewater from washing vehicles and construction equipment shall be collected into a settling pond before discharged into local drainage system- At completion of construction works, wastewater collection tanks	<p>technical regulation on industrial wastewater</p> <ul style="list-style-type: none">- Decree No. 38/2015/NĐ-CP dated 24/04/2015 on waste and scrap management- Circular No. 36/2015/TT-BTNMT on Management of Hazardous Wastes- Decision No. 59/2007/NĐ-CP on solid waste management- WBG EHS Guidelines		

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	<p>and septic tanks shall be safely disposed of or effectively sealed off</p> <p>(b) Stormwater⁴</p> <ul style="list-style-type: none">- Stormwater should be separated from process and sanitary wastewater streams in order to reduce the volume of wastewater to be treated prior to discharge- Surface runoff from process areas or potential sources of contamination should be prevented- Where this approach is not practical, runoff from process and storage areas should be segregated from potentially less contaminated runoff- Runoff from areas without potential sources of contamination should be minimized (e.g. by minimizing the area of impermeable surfaces) and the peak discharge rate should be reduced (e.g. by using vegetated swales and retention ponds);- Where stormwater treatment is deemed necessary to protect the quality of receiving water bodies, priority should be given to managing and treating the first flush of stormwater runoff where the majority of potential contaminants tend to be present;- When water quality criteria allow, stormwater should be managed as a resource, either for groundwater recharge or for meeting water			

⁴ Stormwater includes any surface runoff and flows resulting from precipitation, drainage or other sources. Typically stormwater runoff contains suspended sediments, metals, petroleum hydrocarbons, Polycyclic Aromatic Hydrocarbons (PAHs), coliform, etc. Rapid runoff, even of uncontaminated stormwater, also degrades the quality of the receiving water by eroding stream beds and banks.

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	<p>needs at the facility</p> <ul style="list-style-type: none"> - Oil water separators and grease traps should be installed and maintained as appropriate at refueling facilities, workshops, parking areas, fuel storage and containment areas - Sludge from stormwater catchments or collection and treatment systems may contain elevated levels of pollutants and should be disposed in compliance with local regulatory requirements, in the absence of which disposal has to be consistent with protection of public health and safety, and conservation and long term sustainability of water and land resources <p>(c) Solid waste</p> <ul style="list-style-type: none"> - Before construction, a solid waste control procedure (storage, provision of bins, site clean-up schedule, bin clean-out schedule, etc.) shall be prepared by Contractors and it must be carefully followed during construction activities - Before construction, all necessary waste disposal permits or licenses shall be obtained - Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities - Solid waste shall be temporarily stored on site in a designated area approved by the Construction Supervision Consultant and relevant local authorities prior to collection and disposal through a licensed waste collector - Waste storage containers shall be covered, tip-proof, weatherproof 			

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	<p>and scavenger proof</p> <ul style="list-style-type: none">- No burning, on-site burying or dumping of solid waste shall occur- 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 for reuse, for use as fill, or for sale- If not removed off site, solid waste or construction debris shall be disposed of only at sites identified and approved by the Construction Supervision Consultant and included in the solid waste plan. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas, such as in areas of natural habitat or in watercourses <p>II. Hazardous Wastes</p> <p>(a) Storage of hazardous wastes</p> <p>Hazardous waste should be stored so as to prevent or control accidental releases to air, soil, and water resources in area location where:</p> <ul style="list-style-type: none">- Waste is stored in a manner that prevents the commingling or contact between incompatible wastes, and allows for inspection between containers to monitor leaks or spills. Examples include sufficient space between incompatibles or physical separation such as walls or containment curbs- Store in closed containers away from direct sunlight, wind and rain- Storage should be on an impermeable surface that readily able to be cleaned, and that is appropriately bunded to contain any spills or leaks. The storage area should be covered to prevent rainwater from accumulating in the bunded area			

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	<ul style="list-style-type: none"> - Secondary containment systems should be constructed with materials appropriate for the wastes being contained and adequate to prevent loss to the environment - Secondary containment is included wherever liquid wastes are stored in volumes greater than 220 liters. The available volume of secondary containment should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location - Provide adequate ventilation where volatile wastes are stored <p>(b) Hazardous Wastes Transportation</p> <ul style="list-style-type: none"> - On-site and Off-site transportation of waste should be conducted so as to prevent or minimize spills, releases, and exposures to employees and the public - All waste containers designated for off-site shipment should be secured and labeled with the contents and associated hazards, be properly loaded on the transport vehicles before leaving the site, and be accompanied by a shipping paper (i.e., manifest) that describes the load and its associated hazards, consistent with the guidance <p>(c) Disposal of hazardous wastes</p> <ul style="list-style-type: none"> - Chemical wastes of any kind shall be disposed of at an approved appropriate landfill site and in accordance with local legislative requirements. The Contractor shall obtain needed disposal certificates - The removal of hazardous wastes shall be performed and disposed 			

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	<p>of by specially trained and certified workers</p> <ul style="list-style-type: none"> - Used oil and grease shall be removed from site and sold to an approved used oil recycling company - Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and removed from site by a specialized oil recycling company for disposal at an approved hazardous waste site - Unused or rejected tar or bituminous products shall be returned to the supplier's production plant 			
Management of hazardous materials	<p>Hazardous Materials Transfer</p> <ul style="list-style-type: none"> - Use of dedicated fittings, pipes, and hoses specific to materials in tanks (e.g., all acids use one type of connection, all caustics use another), and maintaining procedures to prevent addition of hazardous materials to incorrect tanks - Use of transfer equipment that is compatible and suitable for the characteristics of the materials transferred and designed to ensure safe transfer - Regular inspection, maintenance and repair of fittings, pipes and hoses - Provision of secondary containment, drip trays or other overflow and drip containment measures, for hazardous materials containers at connection points or other possible overflow points <p>Overfill Protection</p> <ul style="list-style-type: none"> - Prepare written procedures for transfer operations that includes a checklist of measures to follow during filling operations and the 	<ul style="list-style-type: none"> - WBG EHS Guidelines - Decree No. 38/2015/NĐ-CP dated 24/04/2015 on waste and scrap management - Circular No. 36/2015/TT-BTNMT on hazardous waste management 	Contractor	PPMU, CSC

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	<p>use of filling operators trained in these procedures</p> <ul style="list-style-type: none"> - Installation of gauges on tanks to measure volume inside - Use of dripless hose connections for vehicle tank and fixed connections with storage tanks - Provision of automatic fill shutoff valves on storage tanks to prevent overfilling - Use of a catch basin around the fill pipe to collect spills - Use of piping connections with automatic overfill protection (float valve) - Pumping less volume than available capacity into the tank or vessel by ordering less material than its available capacity - Provision of overfill or over pressure vents that allow controlled release to a capture point <p>Reaction, Fire and Explosion Prevention</p> <ul style="list-style-type: none"> - Storage of incompatible materials (acids, bases, flammables, oxidizers, reactive chemicals) in separate areas, and with containment facilities separating material storage areas - Provision of material-specific storage for extremely hazardous or reactive materials - Use of flame arresting devices on vents from flammable storage containers - Provision of grounding and lightning protection for tank farms, transfer stations, and other equipment that handles flammable 			

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	<p>materials</p> <ul style="list-style-type: none">- Selection of materials of construction compatible with products stored for all parts of storage and delivery systems, and avoiding reuse of tanks for different products without checking material compatibility- Storage of hazardous materials in an area of the facility separated from the main production works. Where proximity is unavoidable, physical separation should be provided using structures designed to prevent fire, explosion, spill, and other emergency situations from affecting facility operations- Storage should be on an impermeable surface that readily able to be cleaned, and that is appropriately bunded to contain any spills or leaks. The storage area should be covered to prevent rainwater from accumulating in the bunded area- Prohibition of all sources of ignition from areas near flammable storage tanks <p>Secondary Containment (Liquids)</p> <ul style="list-style-type: none">- Transfer of hazardous materials from vehicle tanks to storage in areas with surfaces sufficiently impervious to avoid loss to the environment and sloped to a collection or a containment structure not connected to municipal wastewater/stormwater collection system- Where it is not practical to provide permanent, dedicated containment structures for transfer operations, one or more alternative forms of spill containment should be provided, such as portable drain covers (which can be deployed for the duration of the operations), automatic shut-off valves on storm water basins, or			

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	<p>shut off valves in drainage or sewer facilities, combined with oil-water separators</p> <ul style="list-style-type: none"> - Storage of drummed hazardous materials with a total volume equal or greater than 1,000 liters in areas with impervious surfaces that are sloped or bermed to contain a minimum of 25 percent of the total storage volume - Provision of secondary containment for components (tanks, pipes) of the hazardous material storage system, to the extent feasible - Conducting periodic (e.g. daily or weekly) reconciliation of tank contents, and inspection of visible portions of tanks and piping for leaks - Use of double-walled, composite, or specially coated storage and piping systems particularly in the use of underground storage tanks (USTs) and underground piping. If double walled systems are used, they should provide a means of detecting leaks between the two walls <p>Training - Employees should be provided training on Hazmat management. The training program should include:</p> <ul style="list-style-type: none"> - A list of employees to be trained - Specific training objectives - Mechanisms to achieve the objectives (i.e., hands-on workshops, videos, etc.) - The means to determine whether the training program is effective - Training procedures for new hires and refresher courses for existing employees 			

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	Community Involvement and Awareness <ul style="list-style-type: none"> - Availability of general information to the potentially affected community on the nature and extent of project operations, and the prevention and control measures in place to ensure no effects to human health - The potential for off-site effects to human health or the environment following an accident at planned or existing hazardous installations - Specific and timely information on appropriate behavior and safety measures to be adopted in the event of an accident including practice drills in locations with higher risks - Access to information necessary to understand the nature of the possible effect of an accident and an opportunity to contribute effectively, as appropriate, to decisions concerning hazardous installations and the development of community emergency preparedness plans - DONRE and DOH shall be promptly informed of any accidental spill or incident - Prepare and initiate a remedial action following any spill or incident. In this case, the contractor shall provide a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions 			
Soil erosion	Sediment mobilization and transport <ul style="list-style-type: none"> - Reducing or preventing erosion by: 	WBG EHS Guidelines	Contractor	PPMU, CSC

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	<ul style="list-style-type: none"> • Scheduling to avoid heavy rainfall periods (i.e., during the dry season) to the extent practical • Contouring and minimizing length and steepness of slopes • Mulching to stabilize exposed areas • Re-vegetating areas promptly • Designing channels and ditches for post-construction flows • Lining steep channel and slopes (e.g. use jute matting) <p>- Reducing or preventing off-site sediment transport through use of settlement ponds, silt fences, and water treatment, and modifying or suspending activities during extreme rainfall and high winds to the extent practical</p> <p>Clean runoff management</p> <p>- Segregating or diverting clean water runoff to prevent it mixing with water containing a high solids content, to minimize the volume of water to be treated prior to release</p> <p>Road design</p> <p>- Limiting access road gradients to reduce runoff-induced erosion</p> <p>- Providing adequate road drainage based on road width, surface material, compaction, and maintenance</p> <p>Disturbance to water bodies</p> <p>- Depending on the potential for adverse impacts, installing free-spanning structures (e.g., single span bridges) for road watercourse</p>			

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	<p>crossings</p> <ul style="list-style-type: none"> - Restricting the duration and timing of in-stream activities to lower low periods, and avoiding periods critical to biological cycles of valued flora and fauna (e.g., migration, spawning, etc.) - For in-stream works, using isolation techniques such as berming or diversion during construction to limit the exposure of disturbed sediments to moving water - Consider using trenchless technology for pipeline crossings (e.g., suspended crossings) or installation by directional drilling <p>Structural (slope) stability</p> <ul style="list-style-type: none"> - Providing effective short term measures for slope stabilization, sediment control and subsidence control until long term measures for the operational phase can be implemented - Providing adequate drainage systems to minimize and control infiltration 			
Drainage and sedimentation control	<ul style="list-style-type: none"> - The Contractor shall follow the detailed drainage design included in the construction plans, intended to prevent storm water from causing local flooding or scouring slopes and areas of unprotected soil resulting in heavy sediment loads affecting local watercourses. - Ensure drainage system is always maintained cleared of mud and other obstructions. - Areas of the site not disturbed by construction activities shall be maintained in their existing conditions. - Earthworks, cuts, and fill slopes shall be properly maintained, in accordance with the construction specifications, including 	<ul style="list-style-type: none"> - TCVN 4447:1987: Earth works-Codes for construction - - Decree No. 22/2010/TT-BXD on regulation of construction safety - QCVN 08-MT:2015/BTNMT – 	Contractor	PPMU, CSC

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	<p>measures such as installation of drains, use of plant cover.</p> <ul style="list-style-type: none"> - To avoid sediment-laded runoff that could adversely impact watercourses, install sediment control structures where needed to slow or redirect runoff and trap sediment until vegetation is established. Sediment control structures could include windrows of logging slash, rock berms, sediment catchment basins, straw bales, storm drain inlet protection systems, or brush fences. - Site de-watering and water diversions: In the case that construction activities require that work be carried out within the watercourse (e.g. culvert or bridge crossing construction, retaining wall construction, erosion protection works), the work area must be dewatered to provide for construction in dry conditions. The sediment laden water pumped from the work area must be discharged to an appropriate sediment control measure for treatment before re-release to the stream. - Stream diversions or construction of cofferdams would require site-specific mitigation measures in the EMP. 	National technical regulation on quality of surface water		
Disruption of vegetative cover and ecological resources	<ul style="list-style-type: none"> - The Contractor shall prepare a Clearance, Revegetation and Restoration Management Plan for prior approval by the Construction Engineer, following relevant regulations. The Clearance Plan shall be approved by Construction Supervision Consultant and followed strictly by contractor. Areas to be cleared should be minimized as much as possible. - Site clearance in a forested area is subject to permission from Department of Agriculture and Rural Development - The Contractor shall remove topsoil from all areas where topsoil will be impacted on by rehabilitation activities, including temporary activities such as storage and stockpiling, etc; the 	<ul style="list-style-type: none"> - Law on biodiversity No.20/2008/QH12 - Decree 65/2010/NĐ-CP on biodiversity protection 	Contractor	PPMU, CSC

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	<p>stripped topsoil shall be stockpiled in areas agreed with the Construction Supervision Consultant for later use in re-vegetation and shall be adequately protected.</p> <ul style="list-style-type: none"> - The application of chemicals for vegetation clearing is not permitted. - Prohibit cutting of any tree unless explicitly authorized in the vegetation clearing plan. - When needed, erect temporary protective fencing to efficiently protect the preserved trees before commencement of any works within the site. - No area of potential importance as an ecological resource should be disturbed unless there is prior authorization from CSC, who should consult with PPMU, IEMC and the relevant local authorities. This could include areas of breeding or feeding of birds or animals, fish spawning areas, or any area that is protected as a green space. - The Contractor shall ensure that no hunting, trapping shooting, poisoning of fauna takes place. 			
Traffic management safety	<ul style="list-style-type: none"> - Contractor shall strictly comply with Law on Roadway Traffic - Adoption of best transport safety practices across all aspects of subproject operations with the goal of preventing traffic accidents and minimizing injuries suffered by subproject personnel and the public. Measures should include: <ul style="list-style-type: none"> • Emphasizing safety aspects among drivers • Improving driving skills and requiring licensing of drivers 	<ul style="list-style-type: none"> - Law on traffic and transport No. 23/2008/QH12; - Decree 46/2016/ND-CP on administrative penalty for traffic safety violation - Circular No. 22/2010/TT-BXD on 	Contractor	PPMU, CSC

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	<ul style="list-style-type: none"> • Adopting limits for trip duration and arranging driver rosters to avoid overtiredness • Avoiding dangerous routes and times of day to reduce the risk of accidents • Use of speed control devices (governors) on trucks, and remote monitoring of driver actions - Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure - Minimizing pedestrian interaction with construction vehicles - Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present. Collaborating with local communities on education about traffic and pedestrian safety (e.g. school education campaigns) - Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents - Using locally sourced materials, whenever possible, to minimize transport distances. Locating associated facilities such as worker camps close to subproject sites and arranging worker bus transport to minimizing external traffic - Employing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions 	<p>regulation on labour safety in construction</p> <p>- WBG EHS Guidelines</p>		
Interruption to the	- Planned and unplanned interruptions to water, gas, power, internet	- Decree No.	Contractor	PPMU, CSC

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existing service infrastructures	<p>services: the Contractor must undertake prior consultation and contingency planning with local authorities about the consequences of a particular service failure or disconnection.</p> <ul style="list-style-type: none"> - Coordinate with relevant utility providers to establish appropriate construction schedules. - Provide information to affected households on working schedules as well as planned disruptions (at least 5 days in advance). - The contractor should ensure alternative water supply to affected residents in the event of disruptions lasting more than one day. - Any damages to existing utility systems of cable shall be reported to authorities and repaired as soon as possible. 	167/2013/ND-CP on administrative penalty for violations related to social security, order and safety issues		
Workers' camp management	<ul style="list-style-type: none"> - The Contractor and worker camps will be constructed on the land temporarily acquired by the subproject. - The camps will be constructed far enough from the places to be used for stockpile of construction materials, fuel storage, garbage storage, wastewater drainage canal, sensitive sites such as school, hospital, church, pagoda, temple, and other dangerous areas such as landslide, land subsidence, and erosion. - The camps must be ensured with good environmental conditions such as ventilation, full sunlight, clean water, garbage collection, hygienic toilets, mosquito net, fire extinguishers, First-aid Kits, and other health protection measures to all workers. 	<ul style="list-style-type: none"> - Law on Labor No.10/2012/QH13 - Workers' Accommodation: Process and Standards (IFC and EBRD) 	Contractor	PPMU, CSC
Chance Procedures Find	Where the risk and identification process determines that there is a chance of impacts to cultural heritage, the Contractor will retain competent professionals to assist in the identification and protection of cultural heritage.	<ul style="list-style-type: none"> - Law on cultural heritage No. 28/2001/QH10; - Amended and 	Contractor	PPMU, CSC

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	<p>If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:</p> <ul style="list-style-type: none">+ 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. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Culture and Information takes over;+ Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge of the Cultural Property of Viet Nam (within 24 hours or less);+ Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;+ Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;	<p>supplemented Law on cultural heritage No. 32/2009/QH12;</p> <p>- Amended and supplemented Decree No. 98/2010/ND-CP</p>		

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	<ul style="list-style-type: none">+ If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the subproject owner will need to make necessary design changes to accommodate the request and preserve the site;+ Decisions concerning the management of the finding shall be communicated in writing by relevant authorities; and+ Construction works could resume only after permission is granted from the responsible local authorities concerning safeguard of the heritage.			

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
Occupational health and safety	Over-exertion <ul style="list-style-type: none"> - Training of workers in lifting and materials handling techniques in construction and decommissioning, including the placement of weight limits above which mechanical assists or two-person lifts are necessary - Planning work site layout to minimize the need for manual transfer of heavy loads - Selecting tools and designing work stations that reduce force requirements and holding times, and which promote improved postures, including, where applicable, user adjustable work stations - Implementing administrative controls into work processes, such as job rotations and rest or stretch breaks 	<ul style="list-style-type: none"> - Directive No. 02 /2008/CT-BXD on labour safety and sanitation in construction agencies; - Circular No. 22/2010/TT-BXD on regulation on labour safety in construction - QCVN 18:2014/BXD: Technical regulation on safety in construction - WBG EHS Guidelines 	Contractor	PPMU, CSC
	Slips and Falls <ul style="list-style-type: none"> - Implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths - Cleaning up excessive waste debris and liquid spills regularly - Locating electrical cords and ropes in common areas and marked corridors - Use of slip retardant footwear Work in Heights <ul style="list-style-type: none"> - Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters or at any 			

Environmental and Social Management Plan (ESMP)

Vietnam - Emergency Natural Disaster Reconstruction Project – Ninh Thuan Subproject

Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<p>height if the risk includes falling into operating machinery, into water or other liquid, into hazardous substances, or through an opening in a work surface</p> <ul style="list-style-type: none"> - Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards able to support 2,268 kg (also described in this section in Working at Heights above), as well as fall rescue procedures to deal with workers whose fall has been successfully arrested. The tie in point of the fall arresting system should also be able to support 2,268 kg - Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labeling covers for openings in floors, roofs, or walking surfaces <p>Struck By Objects</p> <ul style="list-style-type: none"> - Using a designated and restricted waste drop or discharge zones, and/or a chute for safe movement of wastes from upper to lower levels - Conducting sawing, cutting, grinding, sanding, chipping or chiseling with proper guards and anchoring as applicable - Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap - 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 - Evacuating work areas during blasting operations, and using blast mats or other means of deflection to minimize fly rock or ejection 			

Environmental and Social Management Plan (ESMP)

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<p>of demolition debris if work is conducted in proximity to people or structures.</p> <ul style="list-style-type: none"> - Wearing appropriate PPE, such as safety glasses with side shields, face shields, hard hats, and safety shoes <p>Moving Machinery</p> <ul style="list-style-type: none"> - Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic - Ensuring the visibility of personnel through their use of high visibility vests when working in or walking through heavy equipment operating areas, and training of workers to verify eye contact with equipment operators before approaching the operating vehicle - Ensuring moving equipment is outfitted with audible back-up alarms - Using inspected and well-maintained lifting devices that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations <p>Dust</p> <ul style="list-style-type: none"> - Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements - PPE, such as dust masks, should be used where dust levels are 			

Environmental and Social Management Plan (ESMP)

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<p>excessive</p> <p>Confined Spaces and Excavations</p> <ul style="list-style-type: none"> - Controlling site-specific factors which may contribute to excavation slope instability including, for example, the use of excavation dewatering, side-walls support, and slope gradient adjustments that eliminate or minimize the risk of collapse, entrapment, or drowning - Providing safe means of access and egress from excavations, such as graded slopes, graded access route, or stairs and ladders - Avoiding the operation of combustion equipment for prolonged periods inside excavations areas where other workers are required to enter unless the area is actively ventilated <p>Other Site Hazards</p> <ul style="list-style-type: none"> - Use of specially trained personnel to identify and remove waste materials from tanks, vessels, processing equipment or contaminated land as a first step in decommissioning activities to allow for safe excavation, construction, dismantling or demolition - Use of specially trained personnel to identify and selectively remove potentially hazardous materials in building elements prior to dismantling or demolition including, for example, insulation or structural elements containing asbestos and Polychlorinated Biphenyls (PCBs), electrical components containing mercury - Use of waste-specific PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection 			
Community health and	A. General Site Hazards	- Law on Roadway	Contractor	PPMU, CSC

Environmental and Social Management Plan (ESMP)

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
safety	<ul style="list-style-type: none"> - Subproject should implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction - Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community - Removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials <p>B. Disease Prevention</p> <p><i>Communicable Diseases</i></p> <ul style="list-style-type: none"> - Providing surveillance and active screening and treatment of workers - Preventing illness among workers in local communities by: <ul style="list-style-type: none"> • Undertaking health awareness and education initiatives, for example, by implementing an information strategy to reinforce person-to-person counseling addressing systemic factors that can influence individual behavior as well as promoting individual protection, and protecting others from infection, by encouraging condom use • Training health workers in disease treatment • Conducting immunization programs for workers in local 	<p>Traffic No. 23/2008/QH12</p> <ul style="list-style-type: none"> - Directive No. 02 /2008/CT-BXD on labour safety and sanitation in construction agencies; - Circular No. 22/2010/TT-BXD on regulation on labour safety in construction - QCVN 18:2014/BXD: Technical regulation on safety in construction - WBG EHS Guidelines 		

Environmental and Social Management Plan (ESMP)

Vietnam - Emergency Natural Disaster Reconstruction Project – Ninh Thuan Subproject

Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<p>communities to improve health and guard against infection</p> <ul style="list-style-type: none">• Providing health services• Providing treatment through standard case management in on-site or community health care facilities. Ensuring ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers• Promoting collaboration with local authorities to enhance access of workers families and the community to public health services and promote immunization <p><i>Vector-Born Diseases</i></p> <ul style="list-style-type: none">- Prevention of larval and adult propagation through sanitary improvements and elimination of breeding habitats close to human settlements- Elimination of unusable impounded water- Increase in water velocity in natural and artificial channels- Considering the application of residual insecticide to dormitory walls- Implementation of integrated vector control programs- Promoting use of repellents, clothing, netting, and other barriers to prevent insect bites- Use of chemoprophylaxis drugs by non-immune workers and collaborating with public health officials to help eradicate disease reservoirs			

Environmental and Social Management Plan (ESMP)

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<ul style="list-style-type: none"> - Monitoring and treatment of circulating and migrating populations to prevent disease reservoir spread - Collaboration and exchange of in-kind services with other control programs in the subproject area to maximize beneficial effects - Educating subproject personnel and area residents on risks, prevention, and available treatment - Monitoring communities during high-risk seasons to detect and treat cases - Distributing appropriate education materials - Following safety guidelines for the storage, transport, and distribution of pesticides to minimize the potential for misuse, spills, and accidental human exposure 			
Management of stockpiles and borrow pits	<ul style="list-style-type: none"> - Large-scale borrow pits or stockpiles will need site-specific measures that go beyond those in this ECOP. - All locations to be used must be previously identified in the approved construction specifications. - An open ditch shall be built around the stockpile site to intercept wastewater. - Stockpile topsoil when first opening a borrow pit and use it later to restore the area to near natural conditions. - If the need for new sites arises during construction, they must be pre-approved by the Construction Engineer. - If landowners are affected by use of their areas for stockpiles or borrow pits, they must be included in the subproject RAP. 		Contractor	PPMU, CSC

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Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<ul style="list-style-type: none"> - If access roads are needed, they must have been considered in the environmental assessment. 			
Communication with local communities	<ul style="list-style-type: none"> - Maintain open communications with the local government and concerned communities; the contractor shall coordinate with local authorities (leaders of local wards or communes, leader of villages) for agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days). - Copies in Vietnamese of this ECOP and of other relevant environmental safeguard documents shall be made available to local communities and to workers at the site. - Reduced playground space, loss of playing fields and car parking: The loss of amenities during the construction process is often an unavoidable source of inconvenience to users in sensitive areas. However, early consultation with those affected, provides the opportunity to investigate and implement alternatives. - Disseminate subproject information to affected parties (for example local authority, enterprises and affected households, etc) through community meetings before construction commencement. - Provide a community relations contact from whom interested parties can receive information on site activities, subproject status and subproject implementation results. - Provide all information, especially technical findings, in a language that is understandable to the general public and in a form of useful to interested citizens and elected officials through the preparation of fact sheets and news release, when major findings become available during subproject implementation phase. - Monitor community concerns and information requirements as the 	<ul style="list-style-type: none"> - Decree No. 167/2013/ND-CP on administrative penalty for violations related to social security, order and safety issues 	Contractor	PPMU, CSC

Environmental and Social Management Plan (ESMP)


Vietnam - Emergency Natural Disaster Reconstruction Project – Ninh Thuan Subproject

Environmental and social issues	Mitigation measures	Applicable Standards, Regulations and Guidelines	Responsibility	
			Implementation	Supervision
	<p>subproject progresses.</p> <ul style="list-style-type: none">- Respond to telephone inquiries and written correspondence in a timely and accurate manner.- Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate.- Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures.- At least 15 days in advance of any service interruption (including water and electricity supply, telephone service, bus service, etc.) the community must be advised through postings at the subproject site, at bus stops, and in affected homes/businesses.- Provide technical documents and drawings to local authority and community, especially a sketch of the construction area and the ESMP of the construction site.- Notification boards shall be erected at all construction sites providing information about the subproject, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions			

6.3. Mitigation measures for site-specific impacts during construction



Mitigation measures for site-specific impacts during construction are depicted below.

Table 12: Mitigation measures for site-specific impacts on sensitive receptors

No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
Construction site 1	 <p>Transmission Line 500 kV across construction site</p>	<ul style="list-style-type: none"> - Construction activities may pose damage to the transmission line due to short-circuit by operation of cranes and concrete-ready pump trucks close to the transmission line i.e. within safety corridor of the transmission line. - Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into close proximity with overhead wires can result in arcing between the wires and the object, without actual contact. - Workers working within safety corridor may be affected by magnetic field or electric shock, i.e. at a distance less than 7 meters from the transmission line. 	<ul style="list-style-type: none"> - Establishing “no approach” zones around or under the transmission line with a minimum distance of 7 meters. - No carrying out construction activities within 20 m of transmission line during rainy days - No constructing any works within safety corridor of 17 m (8.5 m each side) of the transmission line. - Prohibiting the following activities (as per Decree 14/2014/ND-CP on Electricity Safety): <ul style="list-style-type: none"> + Using of pylon for constructing tent; + Using the transmission line for other purposes without approval of management unit; + Using construction equipment that may cause vibration or damage to the transmission line; + Stockpiling of soil, construction material, equipment or wastes within 	Contractor	PPMU, CSC



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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
			<p>safety corridor;</p> <ul style="list-style-type: none"> + Stockpiling of explosive, inflammable material and chemicals which may cause corrosion or damage to the transmission line; + Excavating to cause land subsidence for pylon; + Stealing of items of transmission line. 		
Construction site 1	 <p>The fruit garden across construction site</p>	Construction activities cause limited access and damage to fruit garden and thus it leads to loss or reduction in income from trading of fruit	<ul style="list-style-type: none"> - The construction schedule, activities, and associated impacts shall be sent to landholders at least three months before start of the construction. - Maintaining access to the fruit garden and vegetable field as much as possible - No damaging the trees while carrying out construction activities - Restoring the site after construction completion 	Contractor	PPMU, CSC
Construction site 1		Construction activities will cause limited access and damage to vegetable field and thus it leads to loss or reduction in income from trading of vegetable	<ul style="list-style-type: none"> - The construction schedule, activities, and associated impacts shall be sent to landholders at least three months before start of the construction. - Maintaining access to the fruit garden and vegetable field as much as possible - Keeping disturbed areas to be minimal, no 	Contractor	PPMU, CSC



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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
	The vegetable field along river bank eroded of the construction site		<p>stockpile of materials and wastes onto gardens</p> <ul style="list-style-type: none"> - Restoring disturbed areas after construction completion 		
Construction site 2	 <p>The railway bridge across construction site</p>	<p>Construction activities may cause:</p> <ul style="list-style-type: none"> - Erosion of the railway bridge foundation - Potential accident risk to workers 	<ul style="list-style-type: none"> - Following Circular 37/2014/TT-BGTVT on railway traffic protection - Coordinating with the railway manager in the region on suitable time for construction - Prohibiting workers from sitting or moving on the railway - No activities that cause erosion and damage to bridge foundation - Erecting warning boards, monitor the areas to detect if erosion progresses 	Contractor	PPMU, CSC
Construction site 2	 <p>Local electric transmission line across construction site/Construction materials from river bed</p>	<ul style="list-style-type: none"> - Construction activities may pose damage to the transmission line due to short-circuit by operation of cranes and concrete-ready pump trucks close to the transmission line i.e. within safety corridor of the transmission line. - Workers working within safety corridor may be affected by magnetic field or electric shock, i.e. at a distance less than 6 meters from the transmission line. - Illegal exploitation of construction 	<ul style="list-style-type: none"> - Prohibiting the following activities (as per Decree 14/2014/ND-CP on Electricity Safety) - Establishing “no approach” zones around or under the transmission line with a minimum distance of 6 meters. - Construction activities within 16 m of transmission line during rainy days is not allowed. - Exploitation of any construction materials from river bed is subject to DONRE’s approval 	Contractor	PPMU, CSC



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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
		materials from river bed			
Construction site 2	 <p>The local residents living beside construction site</p>	<ul style="list-style-type: none"> - Affect the daily routine of the local people, house structure and landscape - Affect the ambient environment of residents such as noise, dust. 	<ul style="list-style-type: none"> - The construction schedule, activities, and associated impacts shall be sent to the households at least one month before start of the construction. - Horn is limited - Pile driving method shall not be applied. - Restoration of landscape after construction completion 	Contractor	PPMU, CSC
Construction site 2	 <p>The Ba Rau bridge across construction site with deep water</p>	<p>Construction activities may cause</p> <ul style="list-style-type: none"> - Erosion/damages to of Ba Rau bridge foundations - Potential risk of drowning 	<ul style="list-style-type: none"> - No activities that cause damage and erosion to bridge foundation - Providing life vest for workers when working in water - Prohibiting workers from swimming in the river - Installing warning boards “Deep water - No swimming” 		



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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
Construction site 2	 <p>The road-combined spillway as access road across the Ba Rau stream</p>	<ul style="list-style-type: none"> - Affecting public transport during construction - Causing damage to spillway due to use of heavy vehicle trucks and construction machineries - Causing potential risk of traffic accidents - Causing downstream water pollution due to washing vehicle and machineries if any 	<ul style="list-style-type: none"> - Using proper trucks (total laden weight less than 5 tons) only. - No washing vehicles and machineries at stream 	Contractor	PPMU, CSC
Construction site 3	 <p>The existing drainage canal near construction site</p>	<ul style="list-style-type: none"> - Construction activities may cause blocking of water flows due to sedimentation and disposal of construction spoils and wastes. - Worker's health might be affected by unpleasant odor and mosquitoes from the canal if worker's camps located near to the canal, i.e. less than 20 meters far from the canal. 	<ul style="list-style-type: none"> - Excavated soil and construction materials such as sand, stone and gravel shall be stockpiled at least 50 meters far from the canal bank. - Worker's camps shall be located at least 50 meters far from the canal bank. - Disposal of garbage into the canal is prohibited. - Contractors should cooperate with local authority and people to regularly check and clean up the canal bed to ensure no blocking and stagnation throughout construction period. 	Contractor	PPMU, CSC


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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
Construction site 3	 <p>The access road to construction site</p>	<ul style="list-style-type: none"> - Transportation of construction material and construction wastes would cause (i) damage of the road, (ii) dust, exhaust emission, noise and vibration impacts on residents living along both sides of the road, and (iii) traffic accident risks and congestion. 	<ul style="list-style-type: none"> - The construction schedule, activities, and associated impacts shall be sent to the households at least one month before start of the construction. - Consider to use vessel or barge for transportation of construction materials - Using of proper vehicle trucks for transportation. 	Contractor	PPMU, CSC
Construction site 3	 <p>The Long Qui pagoda beside construction site</p>	<p>Construction activities may cause:</p> <ul style="list-style-type: none"> - Dust - Impacts on the spiritual activity of local residents due to noise and traffic congestion - Potential damage to the pagoda due to vibration 	<ul style="list-style-type: none"> - The detailed construction schedule, activities, and associated impacts shall be sent to the pagoda manager by contractors at least one month before start of the construction. - Prepare a proper construction schedule, particularly on the 1st and 15th of lunar months and buddish week (End April). - Stockpile of construction materials, storage of wastes and maintenance of construction equipment and machineries shall be in placed at least 100 m far from the pagoda. - Worker camps shall be located at least 200 meters far from the pagoda. - Workers are required to have a good behavior with local culture and respect for local belief 	Contractor	PPMU, CSC

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No.	Sensitive receptors and their relation to subproject activity	Site-specific impacts	Specific mitigation measures	Responsibility	
				Implementation	Supervision
Construction site 3	 Phu Quy I primary school near construction site	Construction activities may cause: <ul style="list-style-type: none">- Impacts on the health of students and teachers due to dust and exhaust emission, and noise.- Potential accident risk to students and their parents, and teachers due to movement of vehicle trucks.	<ul style="list-style-type: none">- The construction schedule, activities, and associated impacts shall be sent to the school at least one month before start of the construction.- Prohibit transportation at rush hours (6-8 a.m. and 4-6 p.m.).- Worker camps must be located at least 200 meters far from the school.- Stockpile of construction materials, storage of wastes and maintenance of construction equipment and machineries should be in at least 100 m far from the school.	Contractor	PPMU, CSC

6.4. Mitigation Measures Incorporated into Engineering Design to mitigate the Environmental Impacts during Operation Phase

To mitigate potential negative impact due to erosion, measures to stabilize embankment and mitigate erosion should consider engineering combined with greening.

CHAPTER 7. INSTITUTIONAL ARRANGEMENTS

7.1. Implementation Arrangements

The tables and figures below summarize the roles and responsibilities of the key parties and their relationships regarding the implementation of the ESMP.

- Contractors will be responsible for implementing mitigation measures. These measures will be included in bidding documents and their costs are to be included in construction bid packages;
- CSC will be responsible for monitoring the day-to-day implementation of mitigation measures and communication with local communities. Related costs are included in the CSC service contract.

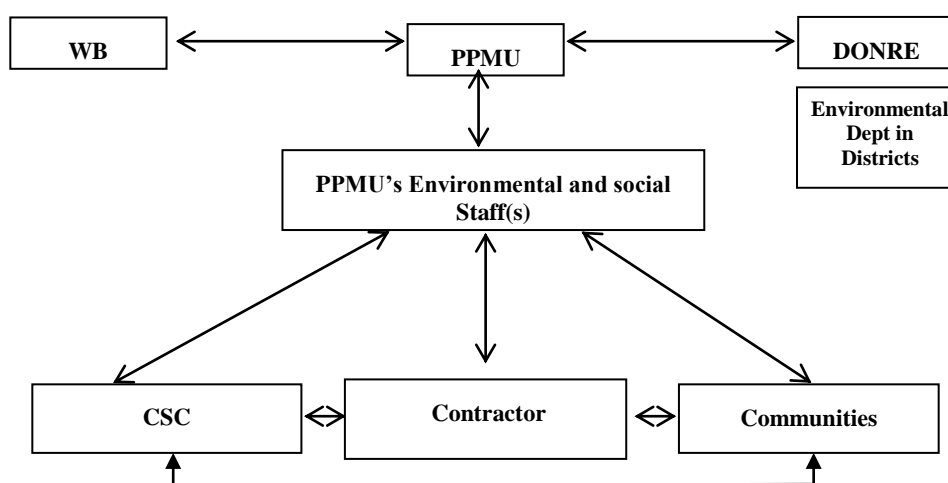


Figure 14: Organizational chart for ESMP Implementation

Table 13: Roles and responsibilities of key parties

Community/ Agencies	Responsibilities
PPMU	<ul style="list-style-type: none"> - PPMU will be responsible for monitoring the overall subproject implementation, including environmental compliance of the subproject. PPMU will have the final responsibility for ESMP implementation and environmental performance of the subproject during the construction and operational phases. - Specifically the PPMU will: (i) closely coordinate with local authorities in the participation of the community during subproject preparation and implementation; (ii) monitor and supervise ESMP implementation including incorporation of ESMP into the detailed technical designs and bidding and contractual documents; (iii) ensure that an environmental management system is set up and functions properly; (iv) be in charge of reporting on ESMP implementation to the DONRE and the World Bank. - In order to be effective in the implementation process, PPMU will assign Environmental Staff(s) (ES) to help with the environmental aspects of the subproject.

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Community/ Agencies	Responsibilities
PPMU Environmental and Social Staff(s) (ES)	<ul style="list-style-type: none"> - The ES is responsible for monitoring the implementation of the World Bank's environmental and social safeguard policies in all phases and process of the subproject. Specifically, ES will be responsible for: (i) helping PPMU incorporate ESMP into the detailed technical designs and civil works bidding and contractual documents; (ii) helping PMU incorporate responsibilities for ESMP and RAP monitoring and supervision into the TORs, bidding and contractual documents for the Construction Supervision Consultant (CSC) as needed; (iii) providing relevant inputs to the consultant selection process; (iv) reviewing reports submitted by the CSC and safeguard consultants; (v) conducting periodic site checks; (vi) helping the PPMU on solutions to handle social and resettlement issues of the subproject; and (vii) preparing environmental and social performance section on the progress and review reports to be submitted to the DONRE and the World Bank.
Construction Supervision Consultant (CSC)	<ul style="list-style-type: none"> - The CSC will assign Environmental and Social Staff(s) and 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 ECOP. The CSC will engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction subproject management to perform the required duties and to supervise the Contractor's performance. - The CSC will also assist the PPMU in (i) reporting and maintaining close coordination with the local community, and (ii) strengthening safeguard capacity for civil contractors.
Bidder	<p>The Bidder shall submit to PPMU the following additional documents in its Bid:</p> <p>Code of Conduct (ESHS)</p> <ul style="list-style-type: none"> • The Bidder shall submit its Code of Conduct that will apply to its employees and subcontractors, to ensure compliance with its Environmental, Social, Health and Safety (ESHS) obligations under the contract. • In addition, the Bidder shall detail how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches <p>Management Strategies and Implementation Plans (MSIP) to manage the (ESHS) risks</p> <ul style="list-style-type: none"> • The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key Environmental, Social, Health and Safety (ESHS) risks. <ul style="list-style-type: none"> + <i>Traffic Management Plan to ensure safety of local communities from construction traffic;</i> + <i>Water Resource Protection Plan to prevent contamination of drinking water;</i> + <i>Boundary Marking and Protection Strategy for mobilization and construction to prevent offsite adverse impacts;</i>

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Community/ Agencies	Responsibilities
	+ <i>Strategy for obtaining Consents/Permits prior to the start of relevant works such as opening a quarry or borrow pit.</i>
Contractor	<ul style="list-style-type: none"> - The contractor shall assign Environmental and Social Staff(s) to carry out Environmental and Social mitigation measures proposed in the ESMP. - The Contractor shall be required to submit to PPMU/CSC for approval, and subsequently implement, the Contractor's Environment and Social Management Plan (C-ESMP), in accordance with the Particular Conditions of Contract Sub-Clause 16.2⁵, that includes the agreed Management Strategies and Implementation Plans. - The Contractor is required to appoint a competent individual as the contractor's on-site <i>Safety and Environment Officer (SEO)</i> who will be responsible for monitoring the contractor's compliance with Code of Conduct and MSIP which is set out in the Section VII – Works' Requirements of SPDs. - Take actions to mitigate all potential negative impacts in line with the objective described in the CESMP. - Actively communicate with local residents and take actions to prevent disturbance during construction. - Ensure that all staff and workers understand the procedure and their tasks in the environmental management program. - Report to the PPMU and CSC on any difficulties and their solutions. - Report to local authority and PPMU and CSC if environmental accidents occur and coordinate with agencies and keys stakeholders to resolve these issues.
Local community	<ul style="list-style-type: none"> - Community: According to Vietnamese practice, the community has the right and responsibility to routinely monitor environmental performance during construction to ensure that their rights and safety are adequately protected and that the mitigation measures are effectively implemented by contractors and the PPMU. If unexpected problems occur, they will report to the CSC and PPMU.
Province and City People's Committees (PPCs/DPCs), Provincial DONRE	<ul style="list-style-type: none"> - 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.

⁵ The Contractor shall not commence any Works, including mobilization and/or pre-construction activities (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits), unless the Project Manager is satisfied that appropriate measures are in place to address environmental, social, health and safety risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of Conduct, submitted as part of the Bid and agreed as part of the Contract. The Contractor shall submit, on a continuing basis, for the Project Manager's prior approval, such supplementary Management Strategies and Implementation Plans as are necessary to manage the ESHS risks and impacts of ongoing works. These Management Strategies and Implementation Plans collectively comprise the Contractor's Environment and Social Management Plan (C-ESMP). The C-ESMP shall be approved prior to the commencement of construction activities (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). The approved C-ESMP shall be reviewed, periodically (but not less than every six (6) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-ESMP shall be subject to prior approval by the Project Manager.

7.2. Environmental Compliance Framework

Duties of the Contractor, the SEO and the CSC set out here that are not already addressed within the SPDs should be incorporated into the Employers Requirements (section VII of the SPDs).

(i) *Environmental Duties of the Contractor*⁶

The contractor shall firstly adhere to minimize the impact that may be result of the subproject construction activities and secondly, apply the mitigation measures under ESMP to prevent harm and nuisances on local communities and the environment caused by the impacts in construction and operation phases.

Remedial actions that cannot be effectively carried out during construction should be carried out on completion of the works (*and before issuance of the acceptance of completion of works*)

The duties of the Contractor include, but not limited to:

- Compliance with relevant legislative requirements governing the environment, public health and safety;
- Work within the scope of contractual requirements and other tender conditions;
- Organize representatives of the construction team to participate in the joint site inspections undertaken by the Environmental Staff of the CSC;
- Carry out any corrective actions instructed by the Environmental Staff of the PPMU and CSC;
- In case of non-compliances/discrepancies, carry out investigation and submit proposals on mitigation measures, and implement remedial measures to reduce environmental impact;
- Stop construction activities, which generate adverse impacts upon receiving instructions from the Environmental Staff of PPMU and CSC. Propose and carry out corrective actions and implement alternative construction method, if required, in order to minimize the environmental impacts; Non-compliance by the Contractor will be cause for suspension of works and other penalties until the non-compliance has been resolved to the satisfaction of the ES of PMU and CSC.

(ii) *Contractor's Safety, Social and Environmental Officer (SEO)*

⁶ If the Contractor was, or is, failing to perform any ESHS obligations or work under the Contract, the value of this work or obligation, as determined by the Project Manager, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:

- failure to comply with any ESHS obligations or work described in the Works' Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;
- failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ESHS issues, or anticipated risks or impacts;
- failure to implement the C-ESMP;
- failing to have appropriate consents/permits prior to undertaking Works or related activities;
- failure to submit ESHS report/s (as described in Appendix C of SPDs), or failure to submit such reports in a timely manner;
- failure to implement remediation as instructed by the Engineer within the specified timeframe (e.g. remediation addressing non-compliance/s).

The contractor shall be required to appoint competent staff(s) as the Contractor's on-site safety, Social and environmental officer (SEO). The SEO must be appropriately trained in environmental management and must possess the skills necessary to transfer environmental management knowledge to all personnel involved in the contract. The SEO will be responsible for monitoring the contractor's compliance with the ESMP requirements and the environmental specifications. The duties of the SEO shall include but not be limited to the following:

- Carry out environmental site inspections to assess and audit the contractors' site practice, equipment and work methodologies with respect to pollution control and adequacy of environmental mitigation measures implemented;
- Monitor compliance with environmental protection measures, pollution prevention and control measures and contractual requirements;
- Monitor the implementation of environmental mitigation measures;
- Prepare audit reports for the site environmental conditions;
- Investigate complaints and recommend any required corrective measures;
- Advise the contractor on environment improvement, awareness and proactive pollution prevention measures;
- Recommend suitable mitigation measures to the contractor in the case of non-compliance. Carry out additional monitoring of noncompliance instructed by the ES of PPMU and CSC
- Inform the contractor and ES (of PPMU and CSC) of environmental issues, submit contractor's ESMP Implementation Plan to the ES of PPMU and CSC, and relevant authorities, if required;
- Keep detailed records of all site activities that may relate to the environment.

(iii) Environmental and Social Supervision during Construction (CSC)

During construction phase, a qualified CSC reporting to the PPMU shall carry out the environmental supervision. The CSC will assign environmental and social staff(s), will be responsible for inspecting, and supervising all construction activities to ensure that mitigation measures adopted in the ESMP are properly implemented, and that the negative environmental impacts of the subproject are minimized. The CSC shall engage sufficient number of Environmental Supervision Engineers with adequate knowledge on environmental protection and construction subproject management to perform the required duties and to supervise the Contractor's performance. Specifically ES of CSC will:

- Review and assess on behalf of the PPMU whether the construction design meets the requirements of the mitigation and management measures of the ESMP,
- Supervise site environmental management system of contractors including their performance, experience and handling of site environmental issues, and provide corrective instructions;
- Review the ESMP implementation by the contractors, verify and confirm environmental supervision procedures, parameters, monitoring locations, equipment and results;
- Report ESMP implementation status to PPMU and prepare the environmental supervision statement during the construction phase; and

(iv) Compliance with Legal and Contractual Requirements

The constructions activities shall comply not only with contractual environmental protection and pollution control requirements but also with environmental protection and pollution control laws of the Socialist Republic of Viet Nam.

All the works method statements submitted by the Contractor to the CSC and PPMU for approval to see whether sufficient environmental protection and pollution control measures have been included.

The CSC and PPMU shall also review the progress and program of the works to check that relevant environmental laws have not been violated, and that any potential for violating the laws can be prevented.

The Contractor shall copy relevant documents to the SEO and the ES of CSC and PPMU. The document shall at least include the updated work progress report, the updated work measure, and the application letters for different license/permits under the environmental protection laws, and all the valid license/permit. The SEO and the ES shall also have access, upon request, to the Site Log-Book.

After reviewing the documents, the SEO or the ES shall advise the PPMU and the contractor of any non-compliance with the contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the SEO or the ES concludes that the status on license/permit application and any environmental protection and pollution control preparation works may not comply with the work measure or may result in potential violation of environmental protection and pollution control requirements, they shall advise the Contractor and the PPMU accordingly.

(v) Reporting Arrangements

In addition to the progress report, the Contractor shall also provide a report on the Environmental, Social, Health and Safety (ESHS) metrics set out in Appendix B of SPDs. In addition to Appendix B reports, the Contractor shall also provide immediate notification to the PPMU of incidents in the following categories. Full details of such incidents shall be provided to the PPMU within the timeframe agreed with the PPMU.

- confirmed or likely violation of any law or international agreement;
- any fatality or serious (lost time) injury;
- significant adverse effects or damage to private property (e.g. vehicle accident, damage from fly rock, working beyond the boundary)
- major pollution of drinking water aquifer or damage or destruction of rare or endangered habitat (including protected areas) or species; or
- any allegation of sexual harassment or sexual misbehavior, child abuse, defilement, or other violations involving children.

Table 14: Regular Reporting Requirements

No.	Report Prepared by	Submitted to	Frequency of Reporting
1	Contractors	CSC	Immediately of certain aspects and monthly with respect to a wider range of aspects
2	Construction Supervision consultant (CSC)	PPMU	Immediately or monthly

4	Community Monitoring Board (CMB)	PPMU	When the community has any complaint about the subproject safeguards implementation
5	PPMU	DONRE	Once every six months in accordance with the GoV's environmental regulations
6	PPMU	WB	Once every six months in accordance with the Section II of the Loan Agreement

7.3. Grievance Redress Mechanism (GRM)

Complaints relating to any subproject's problems will be solved through negotiations to achieve the consensus. A complaint will go through three Stages before it can be transferred to the court. The enforcement unit will pay all administrative and legal fees relating to the acceptance of complaints. This cost is included in the subproject budget. Complaint procedures and resolution will be performed as follows:

The first level *People's Committee of ward /commune*. An affected household is to take his/her complaint to any member of the People's Committee of the ward / commune, through the village head or directly to People's Committee of the commune / ward, in written or oral form. The said member(s) of the People's Committee or the village head will inform the People's Committee of the ward/commune on the complaint. The People's Committee of Ward/Commune will work directly in person with the said affected household and will decide on the settlement of the complaint 5 days after receiving such complaint (this may take 15 days in mountainous or remote areas). The Secretariat of the People's Committee of the relevant commune/ward is responsible for documenting and recording all the complaints that it is handling.

After the Ward/Commune People's Committee issues its decision, the relevant household can make an appeal within 30 days. In case a second decision has been issued but the said household is still not satisfied with such decision, such household can appeal to the municipal (city) People's Committee (CPC).

The second level *The CPC*. Upon receiving a complaint from a household, the CPC will have 15 days (or 30 days in case of remote and mountainous areas) after receiving the complaint to resolve the case. The CPC is responsible for filing and storing documents on all complaints that it handles.

When the CPC has issued a decision, the household can make an appeal within 30 days. In case a second decision has been issued and the household is still not satisfied with such a decision, they can appeal to the Provincial People's Committee (PPC).

The third level *The PPC*. Upon receiving a complaint from the household, the PPC will have 30 days (or 45 days in case of remote and mountainous areas) after receiving the complaint to resolve the case. The PPC is responsible for filing and storing documents for all complaints to be submitted.

After the PPC has issued a decision, the household can appeal within 45 days. In case a second decision has been issued and the household is still not satisfied with such decision, they can appeal to the court within 45 days. The PPC will then have to pay the compensation into an account.

The Forth level *Provincial Court*. In case a complainant brings his/her case to a provincial court and the court rules in favor of the complainant, the provincial authorities will have to increase the compensation up to such a rate as may be ruled by the court. In case the court's ruling is in

favor of the PPC, the complainant will be refunded the amount of money that has been paid to the court.

The decision ruling the settlement of complaints will have to be sent to complainants and concerned parties, and shall be publicly posted at the headquarters of the People's Committee of the relevant level. The complainant will receive such ruling three days after the result of complaint resolution at the ward / commune / town level has been decided upon and 7 days at the district or provincial level.

To minimize the number of complaints at provincial level, the PPMU will coordinate with the District Compensation Committee to participate and provide consultation in solving complaints and respond to complainants. Its role and capacity is to carry out the compensation, support and arrange resettlement for affected households and displaced persons.

Personnel: The environment and resettlement staff chosen by the PPMU will design and maintain a database of the subproject-related complaints from affected households, including information such as: the nature of the complaint, the source and date of receipt of the complaint, the name and address of the complainant, action plan, and current status.

For oral complaints, the receiving/ mediator board will record these requests in a complaint form at the first meeting with the affected person.

Contractor and Construction Supervision Consultant:

During construction, the GRM will also be managed by the contractors under supervision of the CSC. The contractors will inform the affected communities and communes about the GRM availability to handle complaints and concerns about the subproject. This will be done via the community consultation and information disclosure process under which the contractors will communicate with the affected communities and interested authorities on a regular basis. Meetings will be held at least quarterly, monthly information brochures will be published, announcements will be placed in local media, and notices of upcoming planned activities will be posted, etc.

All complaints and corresponding actions undertaken by the contractors will be recorded in subproject safeguard monitoring reports. Complaints and claims for damages could be lodged as follows:

- Verbally: direct to the CSC and/ or the contractors' safeguard staff or representatives at the site offices.
- In writing: by hand-delivering or posting a written complaint to specified addresses.
- By telephone, fax, e-mails: to the CSC, the contractors' safeguard staff or representatives.

Upon receipt of a complaint, the CSC, the contractors' safeguard staff or representatives will register the complaint in a complaint file and maintain a log of events pertaining to it thereafter, until it is resolved. Immediately after receipt, four copies of the complaint will be prepared. The original will be kept in the file, one copy will be used by the contractor's safeguard staff, one copy will be forwarded to the CSC, and the fourth copy to the PPMU within 24 hours since receipt of the complaint.

Information to be recorded in the complaint log will consist of:

- The date and time of the complaint.
- The name, address and contact details of the complainant.
- A short description of the complaint.

- Actions taken to address the complaint, including contact persons and findings at each step in the complaint redress process.
- The dates and times when the complainant is contacted during the redress process.
- The final resolution of the complaint.
- The date, time and manner in which the complainant was informed thereof.
- The complainant's signature when resolution has been obtained.

Minor complaints will be dealt with within one week. Within two weeks (and weekly thereafter), a written reply will be delivered to the complainant (by hand, post, fax, e-mails) indicating the procedures taken and progress to date.

The main objective will be to resolve an issue as quickly as possible by the simplest means, involving as few people as possible, and at the lowest possible level. Only when an issue cannot be resolved at the simplest level and/ or within 15 days, will other authorities be involved. Such a situation may arise, for example, when damages are claimed, the to-be-paid amount cannot be resolved, or damage causes are determined.

World Bank Grievance Redress Mechanism: Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported subproject may submit complaints to existing subproject-level grievance redress mechanism or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address subproject-related concerns. Subproject affected communities and individuals may submit their complaints to the WB's independent Inspection Panel which determines whether harms occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

7.4. ESMP implementation plan

ESMP implementation plan of the Contractor

Shortly after the contract is signed, based on the approved subproject ESMP and construction methods, construction plan approved by CSC and PPMU, the Contractor prepares Contractor's ESMP (C-ESMP) of the package and submits to the CSC for review and approval.

After the C-ESMP is approved by CSC, the contractor carries out the environmental and social impact mitigation measures on site.

The C-ESMP will be disclosed at worker's camp and site office to disseminate the information of mitigation measures to workers.

Making the public information panel at entrances of construction site, address, representative, phone number of stakeholders for supervision by local community and contact as necessary.

Assigning staff in charge of environment and safety, training, providing PPE, regular health examination for workers.

Surveying, examination of environmental status on site, reporting to the CSC if there are significant differences compared to the environmental background.

Contracting with the authorized units for treatment of domestic wastes, hazardous wastes,... and clean water supply.

Managing the workers and construction equipment and providing new certificate in case of expiration.

Implementing ESMP and updating, and submitting to the CSC for approval if there are changes before application.

Cooperating with the PPMU and CSC to deal with the complaint of local people about the environmental and safety problem of the package in a timely manner.

Reporting on the package ESMP implementation monthly.

Start of the subproject and personnel

The staff in charge of environmental safeguards of the contractor must be environmental engineer or have relevant disciplines and must have a certificate of occupational health and safety and work fulltime on site.

Providing training in occupational health and safety for workers and regular conducting examination of worker's health.

7.5. Capacity development and training

Given that PPMU has implemented the Bank-financed projects, it is familiar with the World Bank safeguard policy requirements. However, capacity development and training should be refreshed through technical assistance by the Bank safeguard staff to help the PPMU to conduct effectively monitoring of ESMP implementation.

PPMU's ES will be responsible for coordinating with CSC and Construction Contractor's SEO to provide one-day OHS orientation training to all new employees, visitors, and workers to ensure that they are aware of the basic site rules of work at/on the site and of personal protection and preventing injury to fellow employees. One-day basic OHS training should generally be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards. Such training should be organized at an early stage of implementation to ensure that the ESMP is properly and appropriately translated into the bidding (and subsequent contract) documentation. The technical assistance should be undertaken by appropriately skilled and experienced personnel of CSC, and be undertaken in accordance with a Terms of Reference that includes specific reference to developing effective Employers Requirements sections of the SPDs.

7.6. Environmental monitoring plan

7.6.1. Monitoring of compliance with mitigation measures

Compliance monitoring will be done regularly by PPMU and its construction supervision consultant (CSC). PPMU and its CSC will be responsible for daily monitoring contractor's compliance with agreed mitigation measures. Results will be reflected in the monthly progress reports.

Local authority and community will be undertaking the monitoring task in accordance with the GoV's regulations, i.e. Law on Environmental Protection 2014 and Decree 80/2005/ND-CP - Regulation on community's investment monitoring.

In addition, contractors' ES officer will be responsible for daily monitoring labour safety and environmental hygiene on site and reporting to PPMU and CSC.

Detailed monitoring plan will be prepared during detailed design phase. The cost estimates for monitoring shall be included in the ESMP implementation cost.

7.6.2. Ambient Environmental Quality Monitoring

(a) Periodic monitoring

Ambient environmental quality monitoring program such as air, soil and water quality provides information that can be used to assess the effectiveness of pollution management strategies. A systematic planning process is recommended to ensure that the data collected are adequate for their intended purposes (and to avoid collecting unnecessary data). This process, sometimes referred to as a data quality objectives process, defines the purpose of collecting the data, the decisions to be made based on the data and the consequences of making an incorrect decision, the time and geographic boundaries, and the quality of data needed to make a correct decision. The ambient environmental quality monitoring program shall consider the following elements:

- *Monitoring parameters:* The monitoring parameters selected should reflect the pollutants of concern associated with subproject processes.
- *Baseline calculations:* Before the subproject is developed, baseline ambient environmental quality monitoring at and in the vicinity of the site should be undertaken to assess background levels of key pollutants, in order to differentiate between existing ambient conditions and subproject-related impacts.
- *Monitoring type and frequency:* Data on ambient environmental quality generated through the monitoring program shall be representative of the pollutants emitted by the subproject over time. Monitoring frequency and duration may also range from continuous to less frequent, monthly, quarterly or yearly tests.
- *Monitoring locations:* Ambient environmental quality monitoring may consists of off-site or fence line monitoring either by the subproject owner, DONRE, or by collaboration between both. The location of monitoring stations should be established based on the results of scientific methods and mathematical models to estimate potential impact to the receptors from an emissions source taking into consideration such aspects as the location of potentially affected communities.
- *Sampling and analysis methods:* Monitoring programs should apply national or international methods for sample collection and analysis, such as those published by the International Organization for Standardization (ISO). Sampling shall be conducted by, or under, the supervision of trained individuals. Analysis shall be conducted by entities permitted or certified for this purpose. Sampling and analysis Quality Assurance / Quality Control (QA/QC) plans shall be applied and documented to ensure that data quality is adequate for the intended data use (e.g., method detection limits are below levels of concern). Monitoring reports should include QA/QC documentation.

Noise monitoring may be carried out for the purposes of establishing the existing ambient noise levels in the area of the proposed subproject, or for verifying operational phase noise levels. Noise monitoring programs should be designed and conducted by trained specialists. Typical monitoring periods should be sufficient for statistical analysis and may last 48 hours with the use of noise monitors that should be capable of logging data continuously over this time period, or hourly, or more frequently, as appropriate (or else cover differing time periods within several days, including weekday and weekend workdays). The type of acoustic indices recorded depends on the type of noise being monitored, as established by a noise expert. Monitors should be located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface (e.g., wall). In general, the noise level limit is represented by the background or ambient noise levels that would be present in the absence of noise source(s) under investigation.

Details are shown in the table below.

Table 15: Environmental Monitoring Plan during construction phase

Environment	Location	Frequency	Parameters to be monitored	Applicable National Technical Regulations
Air quality	3 monitoring locations in each construction site: two locations on construction sites and one location near resident areas	Once every three months	SO ₂ , CO, NO ₂ , TSP, PM ₁₀ , PM _{2.5} , Pb	QCVN 05:2013/BTNMT
Noise	Similar to air sampling locations	Once every three months	Equivalent noise level (dBA)	QCVN 26:2010/BTNMT
Excavated soil	2 locations in each construction site	Once	As, Cd, Cu, Pb, Zn	QCVN 03-MT:2015/BTNMT
Surface water quality	In each construction site: one location at upstream and one at downstream	Once every three months	pH, DO, COD, BOD ₅ , TSS, Nitrite (NO ₂ ⁻), Nitrate (NO ₃ ⁻), Ammonium (NH ₄ ⁺), Oil and Grease, Phosphate (PO ₄ ³⁻), Coliforms	QCVN 08-MT: 2015/BTNMT
<i>Proposed construction period of 06 months for each item</i>				

(b) Incident monitoring

The purpose of this monitoring is to assess the level of pollution to land and watercourse due to accidental discharge such as discharge of wastewater and waste oil into nearby watercourse and land and make a timely decision on pollution control which would help reduce environmental risks.

An incident monitoring plan will be developed by CSC at the early stage of subproject implementation and submitted to PPMU for approval. This plan will identify the potential environmental risks due to accidental discharge of wastes such as wastewater and waste oil into nearby watercourse and land. The plan also defines manners to conduct this monitoring, such as competent personnel, equipment, monitoring locations and parameters, analysis method, dedicated laboratory, and cost estimates.

7.7. Cost estimates

Cost estimates for the implementation of this ESMP are given in the following table. The breakdown of cost estimates is depicted in Annex. Cost for mitigation measures implementation will be included in the construction cost.

Table 16: Cost estimates for ESMP monitoring and capacity building

No	Items	Cost (VNĐ)	USD
1	ESMP monitoring	532,440,000	24.357
2	Capacity building	22,000,000	1.006

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	Total	554,440,000	25.363
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CHAPTER 8. PUBLIC CONSULTANT AND INFORMATION DISCLOSURE

8.1. Public Consultation

The objective of the public consultation is to provide a summary of the proposed subproject's objectives, description, and potential impacts and proposed mitigation measures to subproject-affected groups including locally-affected people, local authority and NGOs and take their views into account during engineering design and implementation. It also aims to promote two-way communication between the project owner and project stakeholders, including affected people to ensure generally the public, and particularly the affected group, understand the subproject purpose, subproject design, potential positive and negative environmental impacts of the subproject, and subproject policy on involuntary resettlement. It creates opportunity for affected people to participate in all stages of project implementation. Meaningful feedback from consultations will be considered and integrated in the subproject design and mitigation measures. Consultations with such groups will be carried out during implementation as necessary to address environmental issues that affect them.

The following stakeholders were informed of the subproject purpose and subproject's potential impacts:

- Representatives of affected households;
- Representatives of non-affected households who live adjacent to the project area;
- Representatives of Peoples' Committee in 3 construction sites;
- Representatives of District's Peoples' Committee Thuan Bac, Ninh Phuoc;
- Representatives of Ninh Thuan province Peoples' Committee;
- Representatives of Ninh Thuan PPMU;
- Representatives of Mass organizations, i.e. Women's Union, Farmers' Associations, etc.

Various methods and techniques have been used to conduct public consultation and information disclosure, consultation with and participation of affected peoples, including a) community meetings, b) household survey, c) focus group discussion, field observation and key informant interview. Using various methods and techniques aims to enhance the reliability and validity of the feedback from the subproject stakeholders, particularly the locally-affected people and to ensure that (i) affected people receive fully subproject information; and (ii) all affected people are involved in process of free, prior and informed consultation during preparation and implementation. Consultation meetings and direct interviews took place on the days 03-18 April 2017, with the participation of 13 to 34 affected people at each meeting.

Public Consultation during the Preparation Phase

- ✓ During the project preparation, local authorities have been informed of project proposal and objectives as well as activities. They actively participated in discussions for their prioritized development and were aware of the project's objectives. AHs have been consulted on the impacts and measures taken to minimize the negative impacts and enhance the entitlements to the community. Local authorities have also been advised of agreements and commitments to implementing the resettlement policy.
- ✓ Ninh Thuan PPMU, with the assistance of resettlement consultants, conducted consultations on compensation and resettlement with relevant stakeholders, including

officials from the ward/ commune People's Committees, the leaders of the hamlets and the local population in the affected area

- ✓ After survey, the PPMU has worked with leaders of wards/communes to inform of the implementation of the project, socio-economic survey and Inventory of Loss (IOL), then request the local authorities to work on proposed activities.
- ✓ After completing these surveys and consultations, consulting team has held a meeting with local authorities to deliver the consulting results. At the same time, the consulting teams also figured out related information, advantages and disadvantages, experiences and proposed measures for resettlement action plan and established monitoring indicators as well as further carrying out follow-up implementation in next phases.
- ✓ Early March 2017, Ninh Thuan PPMU sent the official document to local communal PC to inform expected households in the project area to request the local authorities to coordinate and invite affected households to attend the public consultation meetings to make announcement and consult local people and community's opinion about the project policies and people's benefits. The participation of female is particularly paid much attention because these women can raise their voice during the project implementation. The ratio of female participation in public consultation makes up 30%.
- ✓ The Consultant has carried out 03 public consultations at project communes in Ninh Phuoc and Thuan Bac district in April 2017. Attendees in the consultations include the representatives of local authorities and organizations (Farmer's Union, Woman Union, Fatherland Front, Youth Union and representatives of affected households in the project area); Representatives of the PPMU and technical consulting unit.
- ✓ Main contents of the public consultation consists of: (i) project introduction (objectives, location, scale and plan for project implementation; technical detailed design; and policies regarding compensation, support and site clearance/ resettlement of the Government of Vietnam, The World Bank and Policies of the project.

Results of the public consultation with local people in the subproject area show that people in project area actively raise their opinions in the implementation of the project's objectives. Results of public consultations in wards/communes in the subproject area are indicated below:

- The local authorities and local people strongly agree with the subproject implementation and hope the subproject to be soon completed. Currently, embankment/dyke lines along Lu river, Dinh river are seriously slid, affecting people's lives and cultivation as well as public structures of the locality.
- Local people and authorities expect the subproject will be soon implemented to avoid the rainy season (mainly in August, September, and October).
- Local authorities and people hope the construction will take notice on the period of harvesting cash crops and crops of people to mitigate losses.
- Local authorities and people hope to frequently receive the subproject plan and subproject implementation schedule so that AHs can arrange suitable plants, trees and crops.

Local people hope to receive full information about compensation and support so that they are clearly aware of compensation options and stand a chance of making choices.

In response to the views of local authorities and communities, PPMU as the subproject owner were committed to directing contractors to comply with the agreed mitigation plan set out in

this ESMP. PPMU is responsible to Vietnam legislation on environmental protection. PPMU in coordination with CSC conducts monitoring and supervision of contractors' compliance with ESHS metrics. PPMU also expects that local authorities and communities actively participate in the monitoring program to ensure that implementation of the subproject is compliant with the World Bank safeguard policies and national law on environmental protection. During implementation, every comments or suggestions from local authorities and communities will be reviewed and handled in a time manner.



Figure 15: Pictures of the public consultations with local people and authorities in subproject communes

8.2. Information disclosure

The subproject complies with the policy on access to information of the World Bank and the GoV's regulations. Namely, the disclosure is as follows:

- The final draft ESMP was locally disclosed on June 7, 2017 and in the Bank external website on June 20, 2017.
- The final ESMP is expected to be locally disclosed in Vietnamese language by June 25, 2017 and in the Bank's external website by June 30, 2017 prior to subproject appraisal.

Table 19 indicates the dates and locations of disclosure of the final draft and final ESMP of the subproject.

Table 19: Plan for information disclosure

Instrument	Disclosure in	Location	Date
Final draft ESMP	(a) Subproject sites on Information board	(a) Loi Hai, Phuoc Son, and Phuoc Dan communes	(a) 7 June 2017
	(b) The Bank's external website	(b) The Bank's external website	(b) 20 June 2017
	(c) PPMU Office and Website	(c) Ninh Thuan province	(c) 7 June 2017
	(d) DONRE Office	(d) DONRE of Ninh Thuan province	(d) 7 June 2017
Final ESMP	(a) Subproject sites on Information board	(a) Loi Hai, Phuoc Son, and Phuoc Dan communes	(a) 25 June 2017
	(b) The Bank's external website	(b) The Bank's external website	(b) 30 June 2017
	(c) PPMU Office and Website	(c) Ninh Thuan province	(c) 25 June 2017
		(d) DONRE of Ninh Thuan	(d) 25 June 2017

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Instrument	Disclosure in	Location	Date
	(d) DONRE Office	province	

REFERENCES

- Alexander P. Economopoulus, 1993. *Assessment of Sources of Air, Water and Land Pollution - Part One: Rapid Inventory Techniques in Environmental Pollution*. World Health Organization (WHO), Geneva, 1993
- California Department of Transportation. *Transportation and Construction Vibration*. Guidance Manual, September 2013.
- Dannis Aaberg, 2007. Generator Set Noise Solutions: Controlling unwanted noise from on-site power systems. Power topic #7015.
- Environmental, Health, and Safety Guidelines*. (www.ifc.org/ehsguidelines)
- Ninh Thuan Statistical Yearbook, 2015.
- Nguyen Khac Cuong. *Environment in Construction Activities*, Handbook.
- Nguyen Phuoc Dan, 2004. *Wastewater Treatment*. Department of Environment, Ho Chi Minh City University of Technology, 2004.
- Pham Ngoc Dang, and Mackenzie, L.da, 1985. *Air Environment*. Science and Technics Publishing House, 2000.
- Research of Regeneration of Waste Oil to Liquid Fuel*. Ministry of Science - Technology - Environment 2002.
- Resettlement Action Plan (RAP) for Ninh Thuan Subproject. 8 May 2017.
- The Center for Environmental Technology and Management (CENTEMA), 2002. *Research of solid waste from school*.
- World Health Organization (WHO), 2011. *Laboratory Quality Standards and Their Implementation*. ISBN 978 92 9022 397 9.

APPENDIX**APPENDIX 1: Breakdown of cost estimates for ESMP monitoring**

No.	Costs	Unit	Quantity	Unit price (1000 VND)	Amount (1000)
I	Salary for specialists				170,000
2	Environmental specialists	Month	6	20,000	120,00
4	Assistants (3 persons x 6 months)	Month	18	5,000	90,000
II	Sample analysis				75,000
1	Wastewater	Sampl	8	4,000	32,000
2	Air	Sampl	8	5,000	40,000
3	Soil	Sampl	1	3,000	3,000
III	Office supplies		3	7,000	21,000
IV	Management fees (50%)	%	50		153,000
	Total (I+II+III+IV+V)				459,000
	Before tax	%	6		27,540
	VAT	%	10		45,900
	Total				532,440

APPENDIX 2: Breakdown of cost estimates for capacity building

Contents	Trainees	Quantity		Cost (VND)	Funding source
Training on labor safety and environmental protection		Workers and technical personnel of the contractor	All workers and personnel	100 person x 200,000 VND /person = 10,000,000 VND	included in the agreement between the contractor and shareholders
Training on environmental management	Control of waste sources	PPMU personnel	3 persons	500,000 VND /person x 3 personnel = 1,500,000 VND	Included in the agreement between the contractor and shareholders
	Environmental impact assessment and risk control	PPMU personnel	3 persons	500,000 VND /persons x 3 persons = 1,500,000 VND	Included in the agreement between the contractor and shareholders
	Environmental monitoring	PPMU personnel CSC personnel	6 persons (including 3 personnel PPMU and 3 CSC personnel)	500,000 VND/person x 6 persons = 3,000,000 VND	Included in the agreement between the contractor and shareholders
	Awareness enhancement and access to environmental legal system	PPMU personnel CSC personnel	6 persons (including 3 personnel)	500,000 VND/persons x 6 persons = 3,000,000 VND	Included in the agreement between the contractor and shareholders
	Training on environmental monitoring capacity building	CSC personnel	3 persons	3 persons x 1,000,000 VND/person = 3,000,000 VND	Included in the agreement between the contractor and shareholders
	Total			22,000,000 VND	

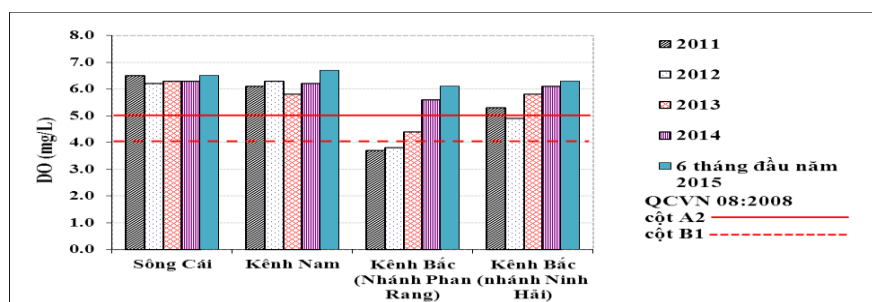
APPENDIX 3. Rainfall (mm) in Phan Rang station (from 2011-2015)

Year Month	2011	2012	2013	2014	2015
Jan	20.6	26.4	29	0	0
Feb	0	14.9	2	0	0
Mar	25.8	29.5	2.3	6.5	0
Apr	10.3	160.2	4.9	5	4.3
May	112.1	45.4	154.6	4.7	6.1
Jun	49.1	117.4	137.9	63.7	58.5
Jul	78.9	99.8	69	76.6	-
Aug	7.3	24.5	70.2	56.2	-
Sep	116.2	332.7	141.8	83	-
Oct	412.7	81.1	106	17.1	-
Nov	38.5	118	330.9	104.3	-
Dec	22.6	34.3	0.7	95.8	-
Total	894.1	1084.2	1049.3	512.9	68.9

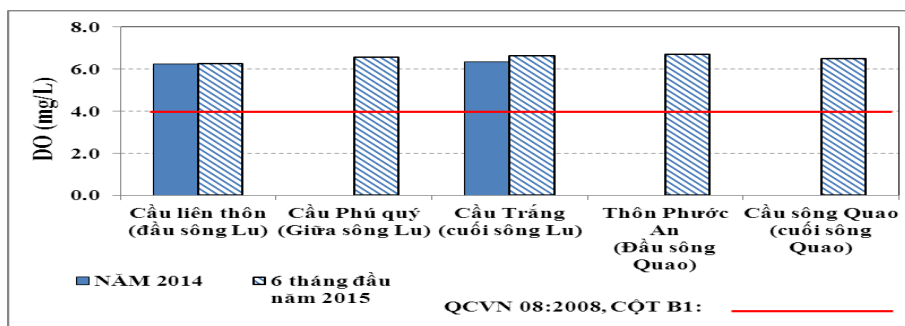
Source: Environmental Status Report of Ninh Thuan province in period 2011-2015

APPENDIX 4: Surface Water Quality

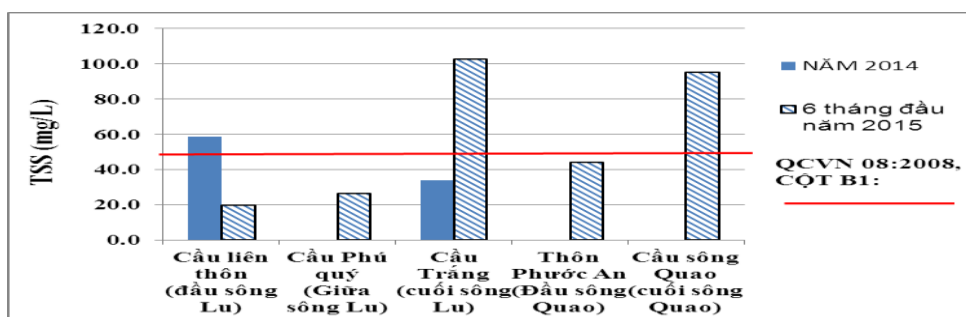
Source: Environmental Status Report of Ninh Thuan province in the period 2011-2015



DO parameter on the main river in Ninh Thuan



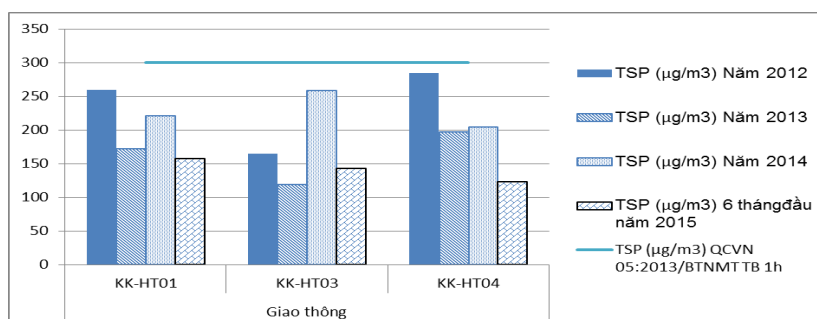
DO parameter on Lu river and Quao river



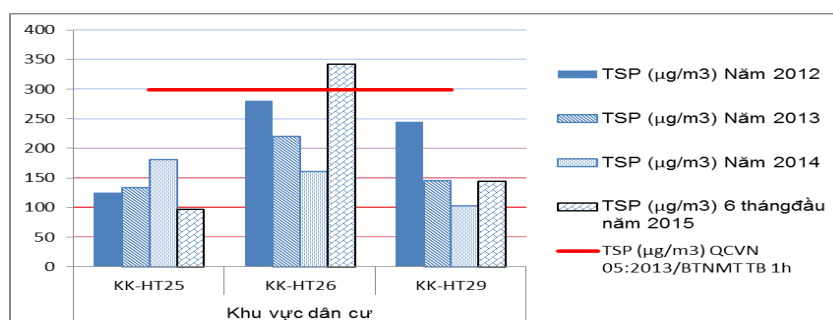
TSS parameter on Lu river and Quao river

APPENDIX 5: Air Quality

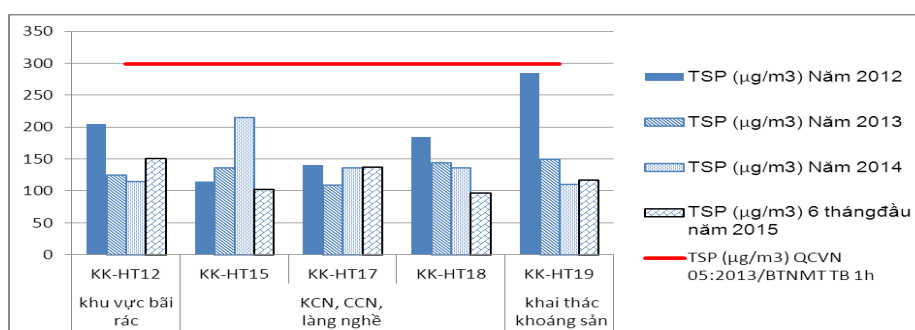
Source: Environmental Status Report of Ninh Thuan province in the period 2011-2015



TSP parameter in some transportation road



TSP parameter in some resident areas



TSP parameter in some mining, industries and disposal sites