

Updated Environmental Monitoring Plan

April 2016

VIE: Rehabilitating and Upgrading Project of Hai Phong Water Supply System – Phase 2 Do Son Component

Prepared by Hai Phong Water Joint Stock Company for the Socialist Republic of Vietnam and the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of April 1st, 2016)

Currency unit	–	Vietnamese Dong
VND1.00	=	\$ 0.0000447670
\$1.00	=	VND 22,337.88

ABBREVIATIONS

AP	Affected Person
ADB	Asian Development Bank
BOD	Biochemical Oxygen Demand
CEMP	Contractor's Environmental Management Plan
CEMR	Contractor's Environmental Management Report
COD	Chemical Oxygen Demand
DARD	Department of Agriculture and Rural Development
DNREO	District Natural Resources and Environment Office
DO	Dissolved Oxygen
DOC	Department of Construction
DOH	Department of Health
DONRE	Department of Natural Resources and Environment
DPC	District People's Committee
EERT	External Emergency Response Team
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
EMR	Environmental Monitoring Report
EPP	Environmental Protection Plan
ERC	Emergency Response Coordinator
Haiphong Water	Haiphong Water Joint Stock Company
IEC	Information, Education and Communication
FS	Feasibility Study
GoV	Government of Vietnam
IEE	Initial Environmental Examination
LEP	Law on Environmental Protection
OE	Operating Unit
O&M	Operation and Maintenance
O&M&R	Operation, Maintenance and Repair
PMU	Project Management Unit
RAP	Resettlement Action Plan
ROW	Right of Way
SERT	Component Emergency Response Team
WHO	World Health Organization
WPC	Ward People's Committee
RP	Resettlement Plan
TSS	Total Suspended Solids

NOTE

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

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1 INTRODUCTION:

1.1 OVERVIEW OF THE PROJECT COMPONENT:

1. The proposed work – Construction of Hung Dao water treatment plant, Rehabilitation of Do Son booster pumping station and the transmission pipe system – is a component of the Rehabilitating & Upgrading Project of Haiphong Water Supply System – Phase 2, which is planned to meet the Millennium Development Goal of having sustainable access to safe drinking water and basic sanitation. Haiphong Water seeks to achieve safe drinking water coverage to 90% of the City's population by 2020 as well as the country's 5-Year Socio-economic Development Plan and ADB's Country Partnership and Strategy.
2. The improvement in the water supply system of Haiphong City would support social, economic and environmental development of the City, supporting trade and commerce, facilitating employment generation, and raising income levels in the project component areas and the City as a whole. The Project will support for women and children as well as address full cost recovery of tariffs to achieve long term financial sustainability of the improvements.
3. According to the Safeguards Policy Statement (SPS) of 2009 of Asian Development Bank (ADB) and an understanding of the impacts that would accrue from the Project implementation, the Project is classified as Category B because the potential adverse environmental impacts are site-specific; few if any of them are irreversible, and mitigation measures can be designed readily. Initial environmental examinations (IEEs) were prepared for the this component (originally as 02 separated components in the 2011 Feasibility Study) in April 2011. The IEEs concluded that the potential direct environmental impacts are mostly construction-related, short-term and acute, thus can be prevented or mitigated with standard construction methodologies and procedures and operational safety measures.
4. During the preparation of the Initial Environmental Examinations (IEEs) for the component, the requisite Environmental Management Plans (EMPs) were also prepared. In the context of the Project, they need to be updated to incorporate information, regulations and revisions in the design made after the preparation of the IEEs. An updated Environmental Management Plan (uEMP) will be prepared for Do Son component (which now include both initial Do Son and Hung Dao components).
5. This report shall address updating of the previous IEEs and EMPs prepared for the components: Do Son and Hung Dao (now combined as Do Son component). As stated in the IEEs and EMPs, the construction works may create adverse impacts on sensitive receptors and the receiving environment in the component areas. Consequently, specific mitigation measures have been identified to address these concerns in compliance with the environmental regulations of the Government of Vietnam (GoV) and the SPS 2009 of ADB. These measures shall be established and implemented during the whole project cycle to mitigate, or if at all possible, eliminate the potential adverse impacts on the sensitive areas and receiving environment.
6. There was no significant change made during the design phase reckoned from the feasibility study phase of the Project completed in 2012, thus, the identified potential impacts and assessment undertaken during the preparation of the IEEs and approved in 2011 are still valid

and appropriate to the component. During updating of the EMPs, the main impacts shall be assessed in detail with specific description and quantitative information. The uEMP for the component Do Son includes additional mitigation measures identified, grievance and redress mechanism, capacity building programs for both PMU and the Contractor(s), and environmental monitoring programs required. The uEMP shall form a part of Bid Documents for tendering of the Project.

1.2 UEMP INTRODUCTION:

7. IEEs for the the component of Do Son and Hung Dao were prepared and subsequently approved by ADB in April 2011 during the Feasibility Study phase of the Project. The IEEs provided general assessments on natural environmental conditions, identified potential impacts, as well as proposing mitigation measures needed to be established. It also included environmental management plans (EMPs) that addressed the establishment of the mitigating measures required and necessary monitoring program.
8. Without detailed design during the preparation of the IEEs, only qualitative assessments on potential impacts, not quantitative and specific ones with detailed analysis, were undertaken. Moreover, some impacts were not stated in the reports such as impacts related to dumping sites, routes of material transport since these would required detailed engineering designs. Therefore, the EMPs from the IEE reports are seen as a framework which requires additional information, ready for the next stage of the Project. The uEMP shall be updated as required during the construction phase to be appropriate to actual requirements.

1.3 OBJECTIVES OF UEMP:

9. In consideration of the above, the specific targets of uEMP are as follows:
 - Update impacts, provide quantitative assessments and recommend specific mitigation measures, including, but not limited, to the followings:
 - Quantify volume of materials and soils required;
 - Comply with environmental safeguard policies of GoV and ADB relative to the operation of the existing quarries, material fill areas and dumpsites;
 - Identify possible impacts, management requirements and mitigation measures for the opening of new quarries, material fill areas and dumpsites;
 - Identify routes of haul trucks for materials and waste disposal, determine probable impacts and establish mitigating measures to minimize, or if possible, eliminate the adverse impacts of these activities to the nearby sensitive receptors and receiving environment;
 - Identify probable impacts of operation of the component on the existing hydrodynamics and hydrology of the river and formulate the necessary mitigating measures to address the impacts;
 - Identify probable impacts of the works (construction of the water treatment plant and installation of the transmission pipes) to be undertaken, such as possible disruption in public utilities and services, and establish necessary mitigating measures to address impacts.



- Update the respective EMPs to include laws, regulations and institutional requirements such as organizational structure, roles and responsibilities of each entity, implementation plan including a detailed schedule of tasks and estimated costs.

1.4 STRUCTURE OF UEMP:

10. The of uEMP report is structured as follows:

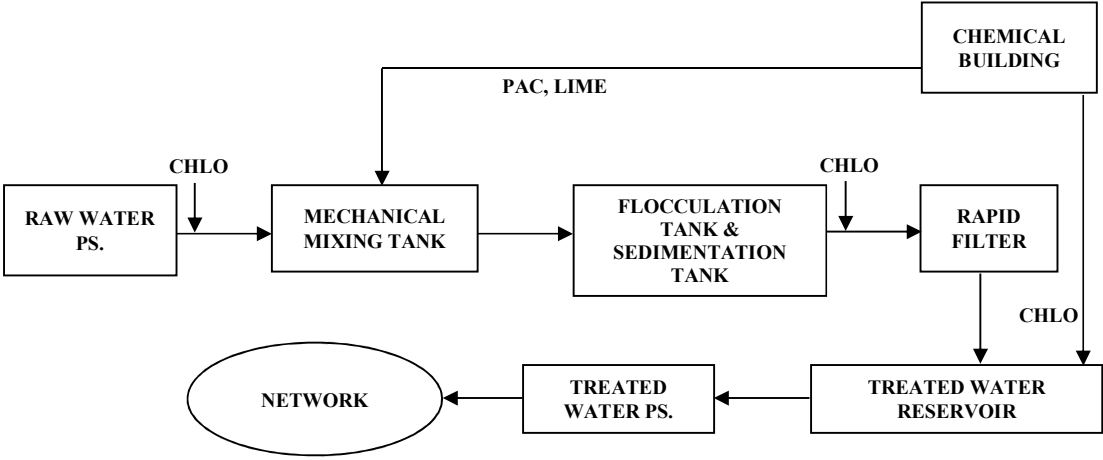
- Chapter 1: Introduction;
- Chapter 2: Description of Component;
- Chapter 3: Project Impacts;
- Chapter 4: Mitigating Measures;
- Chapter 5: Environmental Monitoring Plan;
- Chapter 6: Environmental Management Organization;
- Chapter 7: Conclusion;
- Appendices.

2 DESCRIPTION OF THE COMPONENT:

2.1 PROPOSED WORKS:

11. As stated in the previous sections, this report shall mainly address the updating of the EMP for the component: DO SON (which include both Do Son and Hung Dao components from previous Feasibility Study phases). Table 1 presents the description of the component, while the below Figures show the site location map of the proposed development.
12. The treatment system is designed with the following processes to produce water that meets all requirements on food hygiene according to Vietnamese Standards of QCVN 01:2009/BYT or the National Technical Regulation on drinking water quality, namely standards of treated water quality specified by QCVN 01:2009/BYT and standards at consumer points stipulated by QCVN 01:2009/BYT, and WHO standards.
13. The new Hung Dao WTP will be supplied raw water from Da Do River, a tributary of Van Uc River. All technical data to be used in design of water supply system are applied in accordance with Vietnamese Construction Standards and Water Supply Sector Standards.

TABLE 1. DESCRIPTION OF THE COMPONENT

No.	Item	Technical Specification
1	<p>Construction of Hung Dao Water Treatment Plant:</p>  <pre> graph LR RawWater[RAW WATER PS.] -- CHLO --> Mixing[MECHANICAL MIXING TANK] Mixing -- PAC, LIME --> Mixing Mixing --> Flocculation[FLOCCULATION TANK & SEDIMENTATION TANK] Flocculation -- CHLO --> Filter[RAPID FILTER] Filter -- CHLO --> Reservoir[TREATED WATER RESERVOIR] Reservoir -- CHLO --> Reservoir Reservoir --> TreatedPS[TREATED WATER PS.] TreatedPS --> Network((NETWORK)) ChemBuild[CHEMICAL BUILDING] -- PAC, LIME --> Mixing </pre>	<p>Intake gate and Bar screen:</p> <ul style="list-style-type: none"> - Gather water to the receiving pond; - Prevent floating debris with big sizes from getting into the receiving pond. <p>Raw water pumping station:</p> <ul style="list-style-type: none"> - Prevent floating debris with small sizes from entering into raw water <p>Number of water collected gates: 04 sets to be allocated in front of the intake to receive water flow; Working area of bar screen at Lowest Water Level = 3m².</p> <p>02 pumps, 01 duty and 01 standby with Flow Q= 1,275m³/h, Pressure H = 13m.</p>



<p>pump suction wells;</p> <ul style="list-style-type: none"> - Pump raw water into the treatment block. 	
<p>Mixing tank:</p> <ul style="list-style-type: none"> - Mixing PAC with the raw water. 	<p>Number of tanks: 02; Volume of each mixing tank: $W = 13,446\text{m}^2$.</p>
<p>Mechanical flocculation tanks:</p> <ul style="list-style-type: none"> - Creating the conditions for floc formation. 	<p>Number of tanks: 02; Volume of each chamber: $101,44\text{m}^3$. Total volume of 3 chambers: $304,32\text{m}^3$.</p>
<p>Sedimentation tanks:</p> <ul style="list-style-type: none"> - For settling the flocs formed in the previous flocculation process. 	<p>Number of tanks: 02</p> <ul style="list-style-type: none"> - Length of the sedimentation tank is 30.7m: <ul style="list-style-type: none"> ▪ The length between the high rate settling system and baffle wall is 7.5m; ▪ The length occupied by the high rate settling system itself is only 23m. - Width of the sedimentation tank is 5.1m (internal dimension). - Depth of the tank: <ul style="list-style-type: none"> ▪ Tube module submergence depth: 1.0m; ▪ Height of solid baffle wall (entire front end of tube module): 2.65m; ▪ Height of the inlet provided at the lower part: 2.7m; ▪ Depth of the tank: $2.7\text{m} + 2.65\text{m} = 5.35\text{m}$.
<p>Rapid sand filters:</p> <ul style="list-style-type: none"> - Remove particulate matters. The settled water passes throughout the filter bed where a majority of the particulates is removed in the top portion, as well as throughout the entire depth of the bed. 	<p>Number of filters: 04 Each filter has two (02) compartments (double compartment filters); Plan (internal dimension): $3.0\text{m} \times 9.0\text{m}$; Area of filter bed: 54m^2.</p>
<p>Treated water reservoir:</p> <ul style="list-style-type: none"> - Regulate flow between water produced and water consumption. 	<p>Rectangular tank. Volume of reservoir is 20% capacity of plant $50,000\text{m}^3$; Height of water layer is 3m, width $B = 41\text{m}$; Length of tank $L = 41\text{m}$.</p>
<p>Treated water pumping station:</p> <ul style="list-style-type: none"> - Pump treated water into the distribution network. 	<p>Install 04 treated water pumps, 03 M1 pumps with $Q = 650\text{m}^3/\text{h}$, $H = 55\text{m}$ (2 duty, 1 standby) and 01 M2 pumps with $Q = 1,600\text{m}^3/\text{h}$, $H = 55\text{m}$</p>
<p>Backwash water recovery pumping station:</p> <ul style="list-style-type: none"> - Collect backwash water and sludge from sedimentation tanks then pump sludge to sludge drying beds. 	<p>02 chambers: 01 in duty and 01 in standby; Number of pumps in operation: 02; $Q = 166\text{m}^3/\text{h}$, $H = 10\text{m}$; - Volume of recovery chamber is $W = 330\text{m}^3$, height $H = 3.4\text{m}$, length = 11m, width = 9m.</p>
<p>Sludge drying beds:</p> <ul style="list-style-type: none"> - Storage de-sludge water coming from the sedimentation tanks and backwash water coming from filters; 	<ul style="list-style-type: none"> - Number of sludge drying bed: 03; - Dimension of 1 bed: $8\text{m} \times 24\text{m}$. Area of each bed = 192m^2. Total area of 3 beds = 576m^2; - Depth of sludge layer is 2.58m.



	<ul style="list-style-type: none"> - Discharge the clarified water and retain sludge; - Dry the retaining sludge and removed the dried sludge out of the tank at a 3-4 month interval. 	
	Chemical building:	<p>Storage, EQUIPMENT and facilities to dose chlorine:</p> <ul style="list-style-type: none"> - Main EQUIPMENT and facilities in the chlorine process include: <ul style="list-style-type: none"> ▪ Chlorine cylinder; ▪ Equipment to unload and transport; ▪ Scales; ▪ Evaporated equipment; ▪ Dosing equipment; ▪ Ejector and technical pump; ▪ Safety equipment. - There are two process lines to dose chlorine. One is for pre-chlorination, and one is for disinfection. <p>Storage, EQUIPMENT and facilities to dose lime:</p> <ul style="list-style-type: none"> - Main EQUIPMENT and facilities in the lime process include: <ul style="list-style-type: none"> ▪ Lime storage (CaO): 25kg bag; ▪ Equipment to unload and transport; ▪ Scales; ▪ Lime slake tank; ▪ Buffer tank; ▪ Lime milk tank; ▪ Dosing pump. <p>Storage, equipment and facilities to dose PAC:</p> <ul style="list-style-type: none"> - Main equipment and facilities in the PAC process include: <ul style="list-style-type: none"> ▪ PAC storage: 25kg bag; ▪ Equipment to unload and transport; ▪ Scales; ▪ PAC solution tank (concentration 3%); ▪ Dosing pump.
2	<p><u>Do Son Booster Pumping Station:</u> The booster pumping station is to enhance and develop the existing water supply system. This enables to achieve a sustainable growth in Do Son district. This includes demands not only domestic, but also industrial demand estimated for the future within the projected service areas.</p>	

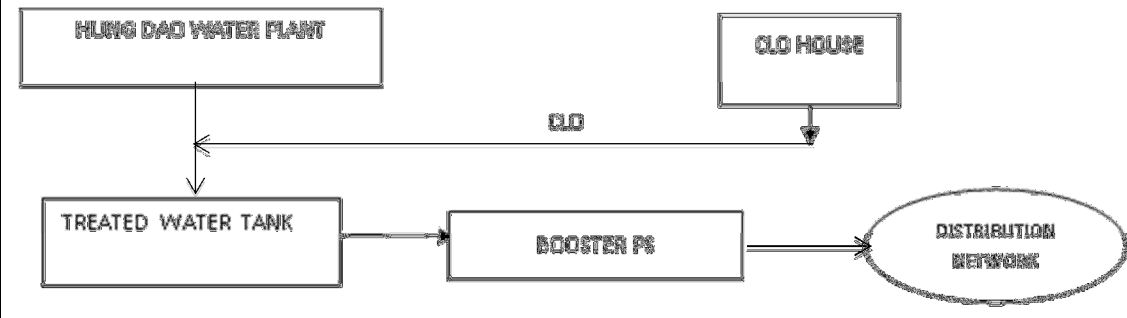
		
	<p>Water tank:</p> <ul style="list-style-type: none"> - Regulate water flow supplied from Hung Dao WTP and the actual flocculation of consumption. 	<p>Capacity of the tank: 5,000m³.</p>
	<p>Treated water pumping station:</p> <ul style="list-style-type: none"> - To supply treated water to the network. 	<p>Number of pumps: 02 with Q = 550m³/h, H = 50m.</p>
	<p>Chlorine house:</p>	<p>Utilize the current alum house with dimension of A×B = 13.5m × 4.5m, install necessary equipment to become chlorine house. Major equipment and facilities for the preparation of line chlorine dosing include:</p> <ul style="list-style-type: none"> ▪ Liquid chlorine tank; ▪ Scaling; ▪ Evaporation equipment; ▪ Dosing equipment; ▪ Pumps and technical ejector; ▪ Safety equipment.
3	<p><u>Transmission Mains:</u></p>	<p>D800: 5,360m; D900: 629m; D300: 6,100m.</p>

FIGURE 1. GENERAL LAYOUT OF HUNG DAO WATER TREATMET PLANT

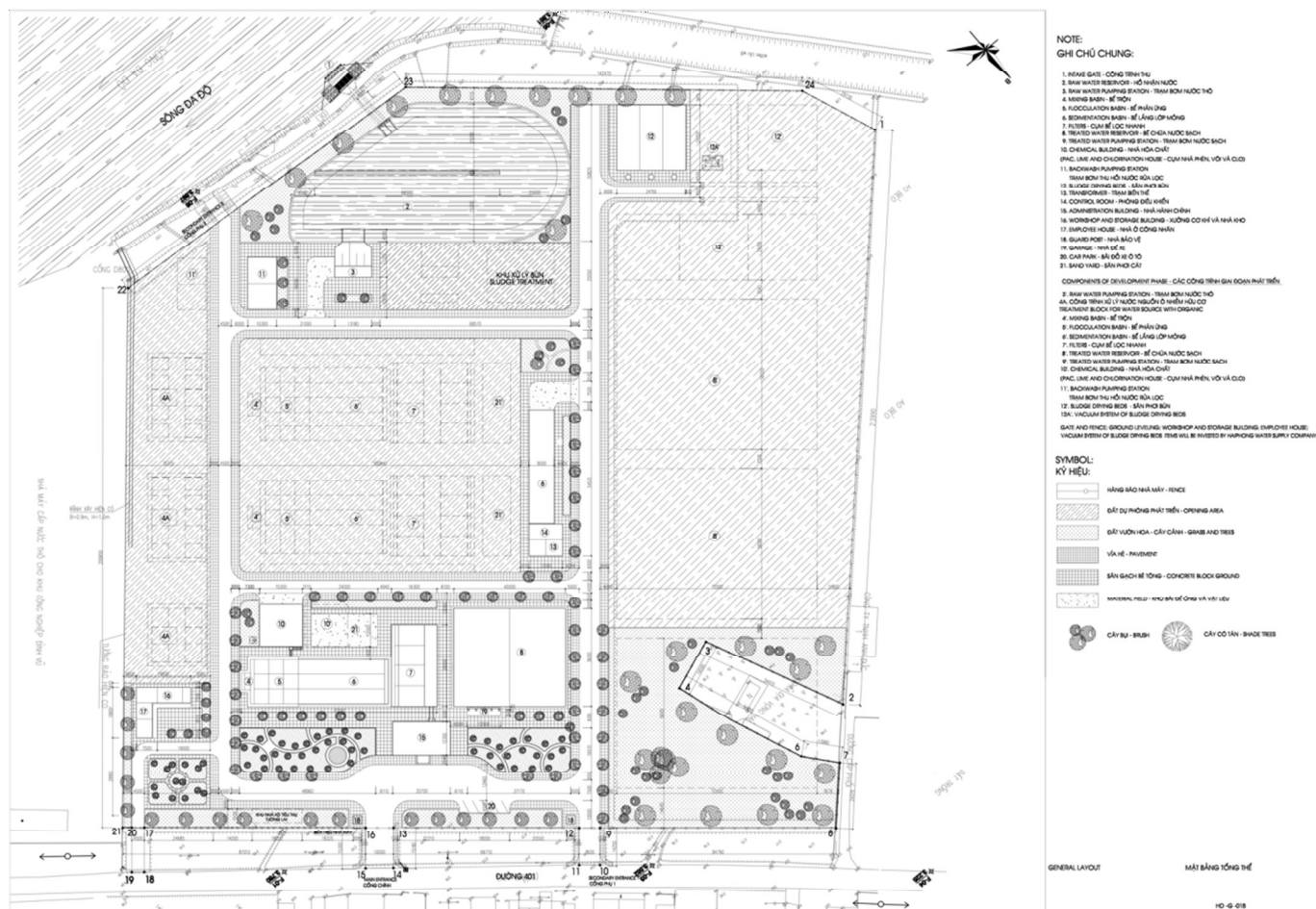


FIGURE 2. GENERAL LAYOUT OF DO SON BOOSTER PUMPING STATION

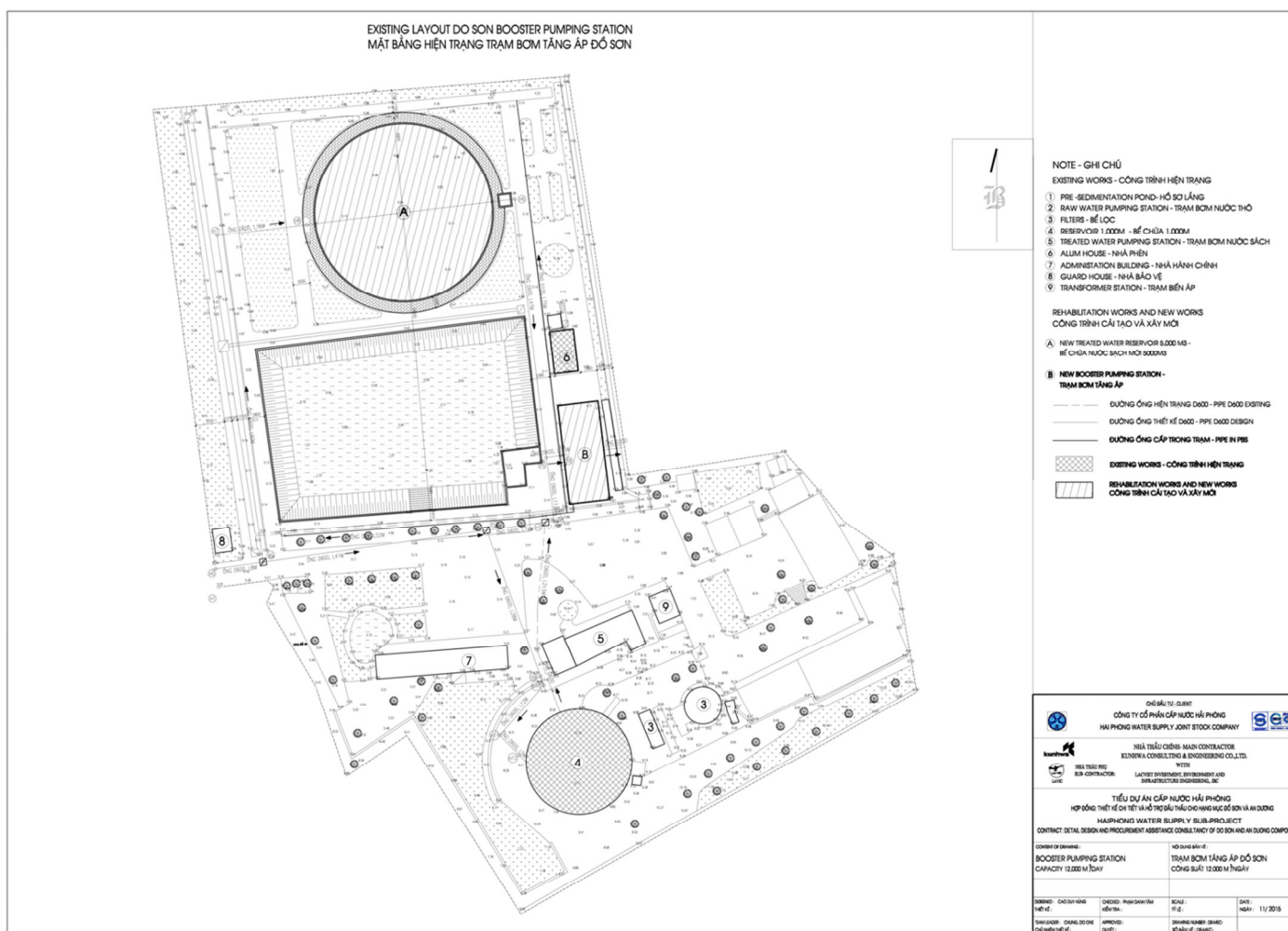
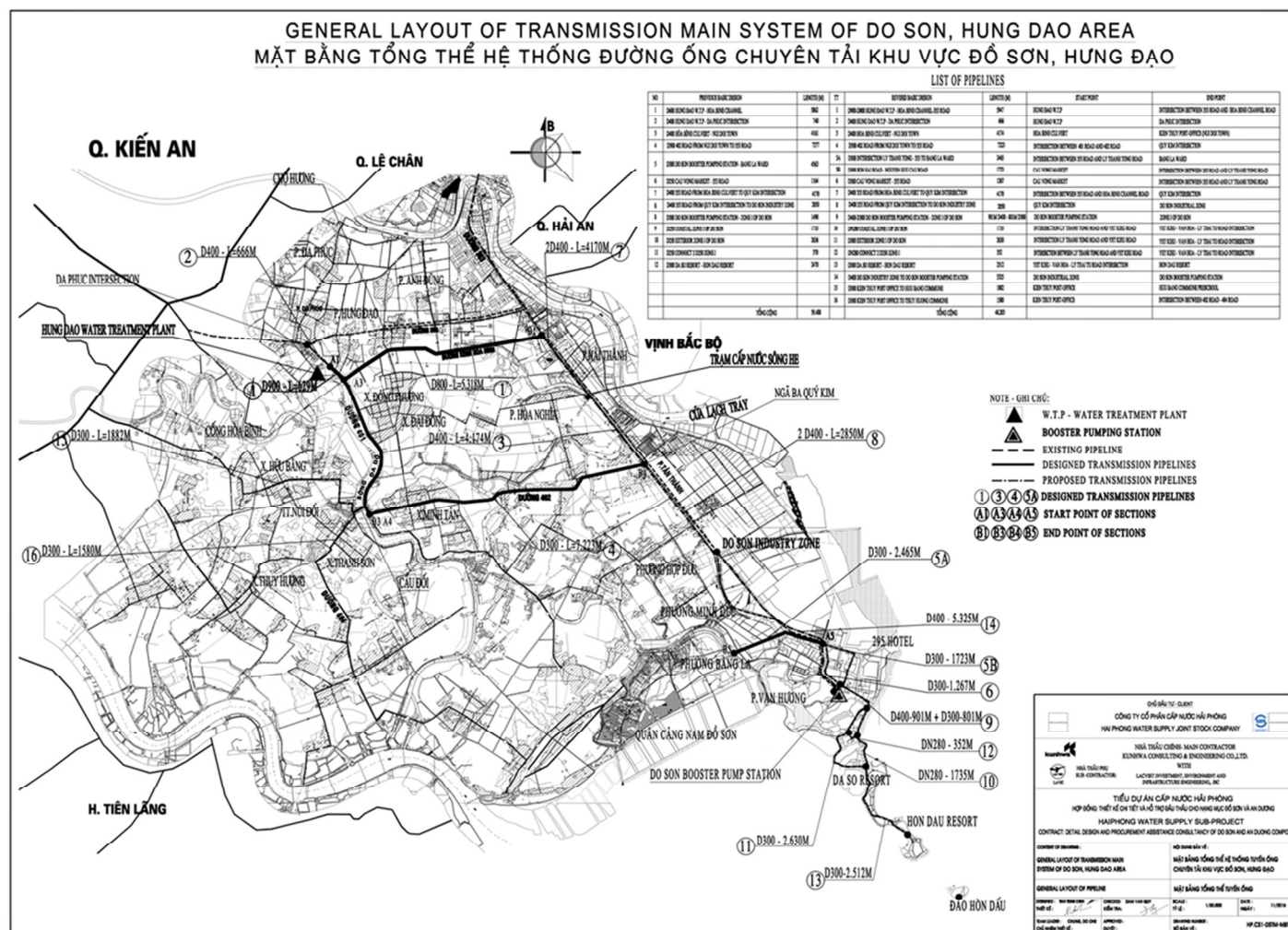


FIGURE 3. MAP OF TRANSMISSION MAINS



2.2 MATERIALS REQUIREMENTS, SOURCING AND DISPOSAL:

14. The required construction materials, such as sand, stone, aggregate, cement, steel, etc., for the works will be sourced from excavated soil, or will be sourced from existing quarries and materials sources areas near the construction and work sites, mostly within the area of Haiphong city. At the time of this uEMP preparation, the quantities of the construction materials have not estimated, and the locations of materials providers also have not been identified. Based on the practical experience of on-going projects in the vicinity of Do Son component, the distance from materials providers to the sites of Hung Dao WTP in Hung Dao ward, Duong Kinh district is 5-7 km in average. These materials shall be hauled to the site by 10-25 tonner trucks and stockpiled properly in the temporary storage/staging areas located within the campus of the site. The type of materials to be extracted, the volume of material required, the location of the existing quarries where fill materials and aggregates will be sourced and the probable transport routes to be taken during the hauling of the materials shall be updated in this uEMP, when they are available to assess the impacts of material transportation on local environment and society.
15. The unused materials that would be generated by installation of transmission mains is about 7,680 m³ consisting of sand, soil, stones and broken bricks, etc. The volume of soft soil needed to be removed for the site of Hung Dao WTP is estimated as 2,140.85 m³ that comes from the site clearance task for 3 ha of total 6.7 ha planned for the WTP. Hence, the total volume of unused materials is approximately 9,828 m³.
16. As the project design, the construction of Hung Dao WTP is divided into two phases; the first ones with capacity of 25,000 m³/day funded by ADB on 3.7 ha, and the second ones for upgrading the capacity up to 100,000m³/day on the remaining area of 3 ha. The fund and implementation schedule for the second phase have not identified in this moment. In this case, total 9,828 m³ of the said unused materials shall be disposed on the standby 4ha. If this area is full, we'll consider to dispose off in specified landfill.

2.3 MANPOWER REQUIREMENT:

17. During the construction works, manpower would need to be hired to undertake the various tasks involved. It is estimated that the works would need estimated 30-40 workers with 70% (proposed by the Contractor) of the total labors will be sourced from the communities adjacent to the sites. This would minimize number of migrant workers that need to be employed for the execution of works, thereby minimizing projected impacts on the social fabric of the communities nearby.

2.4 TEMPORARY WORKER'S FACILITIES:

18. The necessary temporary worker's campsite is proposed to be established within the campus of construction site for Hung Dao WTP. Total area for worker's campsite is about 500m², used also for storage of construction materials, equipment and machinery (an excavator, a compactor/roller and auxiliary equipments, such as water pumps, generators, rock drills, etc.). The site will be properly fenced, and accessibility to the said area will be limited with sentries providing the necessary security for the facility.

TABLE 2. DESCRIPTION OF THE AREA FOR THE TEMPORARY CAMPSITES, MATERIALS STORAGE AND STOCKYARD FOR EQUIPMENT AND MACHINERY

AREA	CAPACITY	CURRENT LAND USE	DISTANCE TO SENSITIVE RECEPTORS
500 m ²	10-12 workers	Within the campus of the proposed Hung Dao WTP	Next to Da Do river. Next to a several local household of Hung Dao ward

2.5 Materials Storage Areas and Warehouses:

19. Material storage areas and warehouses need to be established in order to properly manage the construction materials inventory. This is proposed to be established within the campus of the site for Hung Dao WTP next to the worker's campsite. In case of needing to establish other areas for material storage, the Contractor would make consultations with local authorities and all stakeholders for all options before submitting the chosen ones to PMU and CSC for approval. The Contractor will need to negotiate with the land owner if he wants to use this land, and fair compensation is agreed on by all parties concerned and paid out by in a timely manner. The Contractor will also need to make the necessary arrangements and agreements with suppliers of materials for the delivery of requisite materials and supplies in sufficient quantity for construction progress. Specific location of temporary material storage areas will be identified by the Contractors. Requirements for temporary material storage areas and warehouses will be presented in the uEMP and integrated in the tender documents.

2.6 POWER AND WATER:

20. The Contractors shall utilize electricity from the existing local grid, and provide the necessary Diesel Generating Sets for backup purposes in cases of power outages to ensure the provision of a continuous power source for the works. The Contractors shall source their water requirements for domestic purposes either from local suppliers or groundwater sources in the area through drilled wells.

2.7 EQUIPMENT AND MACHINERY:

21. The upgrading and construction works for the component would require various equipments and machinery. These would include excavators, vibro-compactor rollers, drills, trucks of 10-15ton capacity and auxiliary equipment, such as water pumps, generator.

2.8 COMPONENT IMPLEMENTATION PLAN:

22. The main activities to be undertaken and the proposed schedule relevant to environmental aspects of the component are described by phases in Table 3 below.

TABLE 3. MAIN ACTIVITIES – ENVIRONMENTAL ASPECTS OF THE COMPONENT

PHASE	MAIN ACTIVITIES	PROPOSED SCHEDULE
Pre-construction	Clearance of land including earthwork and leveling activities.	Q1/2016 – Q4/2016



Construction	<ul style="list-style-type: none">▪ Preparation of construction sites with barrier, fences and warning signs;▪ Preparation of workers' campsite and warehouse;▪ Mobilization of construction machinery and materials;▪ Construction of WTP utilities;▪ Construction of internal roads within the WTP;▪ Rehabilitation of Do Son booster pumping station;▪ Installation of transmission mains;▪ Completion of auxiliary works.	Q1/2017 – Q1/2019
Operation	<ul style="list-style-type: none">▪ <i>Regular Maintenance:</i> Conduct maintenance of the WTP: Checking equipment operation; Removal of debris in the open channels; Removal of broken parts; Minor repairs and maintenance work on pipe system.▪ <i>Periodic Maintenance:</i> includes: Checking and repair of damaged portions of pavement, structural works such as tanks, equipment, drainage system, pipe system and others annual.	After Q1/2019

3 IDENTIFICATION OF POTENTIAL IMPACTS OF THE COMPONENT:

23. The identification and assessment of impacts of the component as presented in the approved IEEs prepared in 2011 have been updated in this report. The updates made from the previous IEEs of 2011 are listed in Table 4.

TABLE 4. UPDATES MADE FROM THE APPROVED IEEs OF 2011

IMPACTS	IDENTIFICATION AND ASSESSMENT IN THE IEEs	UPDATED
Pre-construction Phase		
Land acquisition & clearance	Yes	No, referred to the updated RAP
Water user conflict	Yes	Yes
Sensitive and protected areas	Yes	None
Unsatisfactory raw water quality	Yes	None
Construction Phase		
Soil erosion and sedimentation	Yes	Yes with updated information
Public nuisances	Yes	Yes with updated information
Air pollution	Yes	Yes with updated information
Noise pollution	Yes	Yes with updated information
Surface water pollution	Yes	Yes with updated information
Impacts by solid wastes	Yes	Yes with updated information
Soil pollution	Yes	None
Impact on local traffic	Yes	Yes with updated information
Impact on local utilities and service	Yes	Yes with updated information
Impacts of resources extraction	Yes	None
Impacts by operation of worker's camp	Yes	Yes with updated information
Labor accidents and social safety	No	Yes with updated information
Operation Phase		
Noise pollution	Yes	None
Chemical control	Yes	Yes with updated information
Sludge management	No	Yes
Water source protection	No	Yes
Operation and Maintenance related issues	No	Yes

3.1 GENERAL IMPACTS OF THE COMPONENT:

24. Based on the approved IEEs of 2011, detailed design reports, site investigations conducted, discussions and consultations with PMU, DONRE and other relevant documents including that of the Safeguards Policy Statement (SPS) of 2009 of ADB, an assessment of probable impacts and identification of mitigating measures were undertaken for this report mainly as an update to the previous one undertaken during the preparation of IEEs during the Feasibility Study. Implementation of the component and attendant of construction activities may also result to unavoidable impacts, albeit minor in degree and short-term in duration. These are

identified and assessed in the Table 4 above. General impacts that may accrue from the execution of works for the component have been identified and assessed, which is presented in Table 5 below.

TABLE 5. GENERAL IMPACTS OF THE PROPOSED COMPONENT

No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
Pre-construction Phase			
	Water use conflict	Minor	Water user conflict may result from the fact that irrigation farmers using water downstream of the intake from the same river. However, the Master Plan prepared for Haiphong City by District Committee for the period of 2020 - 2050, Da Do River has been identified as the source of water for Hung Dao WTP to extract without any impacts on the other sectors. The rate of abstraction for proposed WTP will be very small compared to river flow/storage in this Da Do River, which also serves as a reservoir. The daily abstraction at 27,000 m ³ per day is less than 3% of water that can be released at 11m ³ /s from Rang Uc River through Trung Trang Gate. When compared to the total storage of Da Do River, daily abstraction for WTP is negligible. Moreover, the flow in Rang Uc River is augmented from Kinh Thay River through an upstream branch called Rang River. As such, any impacts on downstream water users due to water abstraction for the WTP are unlikely.
Construction Phase			
1	Disruption of commercial activities, public services and reduced accessibility to private properties	Minor	<p>The component consists of three main work items: (i) Upgrading Do Son booster pumping station; (ii) Construction of Hung Dao WTP; (iii) Installation of transmission mains; in which the third ones shall be the item producing the most nuisances on public society, due to the installation activities to be carried out on the edge of local existing traffic roads, while the other items are constructed within isolated areas.</p> <p>The installation can cause some impacts such as temporary disruption of electricity, irrigation activities, due to replacement of electric poles, irrigation canals, in the Right of Way (ROW) of transmission mains; temporarily reducing accessibility to public/private properties as well as disruption of commercial activities when the installation is undertaken in front of local households along the existing roads on which the transmission mains are laid.</p> <p>Description of the transmission mains and affected roads are as follows:</p> <ul style="list-style-type: none"> - D800 – 5.3km, on the edge of Hoa Binh embankment road. The pipes are laid on the side of rice fields, no affected households; - D900 – 0.629km, on the edge of 361 provincial road. The pipes run in front of some local houses; - D300 – 2.5km, on the edge of 361 provincial road. The pipes run in front of some local houses; - D300 – 4.6km, on the edge of 362 provincial road. Only 20% of pipe length runs in front of a few local houses.



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<p>This impact is considered as minor for the following reasons:</p> <ul style="list-style-type: none"> - Installation of transmission mains shall be carried out by sections. The time for a section of 50m from excavation to reimbursement of road surfaces is 02 weeks in average; - 70% of transmission mains run on non-residential areas; - Time for electricity disruption is short, 01 or 02 days for replacement of electric poles; - As public consultation during site-visit in March 2016, local people will nomarly need irrigation water for rice fields in June and December. Out of this duration, local irrigation canals are used only for drainage. If the replacement is not in these months, the magnitude of impact will be decreased. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: on the local roads: Hoa Binh embankment road, 361 and 362 provincial roads; ▪ <u>Impact duration</u>: 02 weeks for constructing a section of transmission mains, 02 days for electric poles replacement, 01 months for irrigation canal replacement; ▪ <u>Affected objects</u>: rice-field onwers, residents of Hung Dao ward.
2	Air pollution due to dust re-suspension and exhaust gases (CO, NO _x , SO _x)	Minor	<p>For construction of Hung Dao WTP, upgrading of Do Son booster pumping station and installation of transmission mains, the activities listed below may cause adverse impacts such as dust re-suspension and emission of exhaust gases:</p> <ul style="list-style-type: none"> - Operation of equipment and vehicles emitting exhaust gas (NO_x, CO, CO₂, hydrocarbons, VOCs, etc.) as result of the combustion of fuels, such as gasoline/petrol, diesel fuel, fuel oil; - Transport of materials and excavated unsuitable materials of the installation of transmission main would cause dust (PM10, PM25) by dropping materials/waste as well as exhaust gas; - Earthworks creating a dusty pollution by soil excavation activities; - For installation of transmission mains, fine silt can be produced in excavation works for burying pipes underground. The volume of dust that may be resuspended as a result of the works, is not enough to cause significant dust resuspension. <p>Most of construction activities (Hung Dao WTP and Do Son booster pumping station) will be carried out within isolated areas with a few houses nearby, hence, air pollution will come mostly from transportaion of construction materials and excavated unsuitable materials and installation of transmission mains that the sites are close with local houses. Acute increases in level of dust and exhaust fumes may cause respiratory or lung diseases (i.e.: sinusitis, asthma, etc.) for residents and workers that are directly exposed to these conditions for extended periods.</p>



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<p>The impact is minor due to:</p> <ul style="list-style-type: none"> - 70% of transmission mains go through non-residential and open areas; - Local roads for the said transportation are from 7 to 15m of width with low traffic volume, except for Pham Van Dong street; - A few number of heavy machines. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: on the local roads: Hoa Binh embankment road, 361 and 362 provincial roads, at the sites of Hung Dao WTP, Do Son station; ▪ <u>Impact duration</u>: 24 months for construction phase; ▪ <u>Affected objects</u>: residents of Hung Dao ward.
3	Noise caused by construction equipment and machinery	Minor	<p>Noise caused by operation of vehicles and equipment will adversely affect on households surrounding the construction sites.</p> <p>The noisy sources come from excavators, graders, compactors, rollers, especially drills using for cutting hard surface roads to install outlet pipelines, with noise level over 97-98 dBA at the distance < 15m from the sources.</p> <p>It is similar to the air pollution impacts above, the sites for Hung Dao WTP and Do Son station are within isolated areas, thus the main cause of noise comes from installation of transmission mains. This impact affects on capacity of hearing as well as makes the stress increase. However, construction activities will be carried out mostly during 08 AM to 18 PM, so during other periods of the day, magnitude of impact is lessen a lot.</p> <p>With same reasons as air pollution impact, this impact is minor.</p> <ul style="list-style-type: none"> ▪ <u>Impact location</u>: on the local roads: Hoa Binh embankment road, 361 and 362 provincial roads, at the sites of Hung Dao WTP, Do Son station; ▪ <u>Impact duration</u>: mostly during installation of transmission mains; ▪ <u>Affected objects</u>: residents living along Hoa Binh embankment road, 361 and 362 provincial roads, at the sites of Hung Dao WTP, Do Son station.
4	Generation of solid waste materials from construction activities and domestic waste from workers' camps that require proper disposal	Minor	<p>There are three types of solid waste are generated from construction activities and these are:</p> <ul style="list-style-type: none"> (i) Excavated unsuitable materials from the installation of transmission mains; (ii) Construction wasted such as debris from land clearance activities (i.e. cut trees, fences, etc.), packaging of cement, containers (drums) of fuel, engine oil, lubricants, hydraulic fluid; (iii) Domestic wastes from worker's camps.



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<p>The impact is minor for the following reasons:</p> <ul style="list-style-type: none"> - For type (i) + (ii): non-hazardous solid wastes (estimated as 9,828m³) will be collected and disposed in the standby area of 4ha within the campus of Hung Dao WTP or in specified area according to regulations if it's full. - For type (ii): there will be a worker's camp sufficient to accommodate 10-15 persons with an estimated volume of wastes at 3 or 4kg/day. The Contractors can sign a contract of solid waste collection with local providers for solid waste services; - Solid waste generated during construction activities will be managed using available standard engineering and sanitation practices, while domestic wastes such as toilet sludge will be treated using Ministry of Health's toilet standard designs with the resulting sludge to be given to farmers for soil conditioners. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: construction sites, workers' camp; ▪ <u>Impact duration</u>: 24 months of construction; ▪ <u>Affected objects</u>: None.
5	Obstruction to local vehicle traffic	Minor	<p>Construction vehicles will use the existing local roads to transport building materials and wastes. These transportation roads are urban roads surrounding by local houses. The width of these roads varies from 7 to 15m, and motorbikes are the major transportation mean. Overloaded transport (beyond the road capacity) can cause degradation of the existing local infrastructure, such as roads, bridges and culvert, as well as cause traffic congestions at crowded areas such as Pham Van Dong street, and so on.</p> <p>In addition, for installation of transmission mains, construction activities will be carried out on local traffic roads, which results in narrowing the area for local vehicles, and may affect on local traffic, such as traffic congestion, accident, slow velocity.</p> <p>Due to very low traffic volume on the local roads on which the transmission mains shall be laid, the impact on local traffic caused by construction/transportation activities is minor.</p> <ul style="list-style-type: none"> ▪ <u>Impact location</u>: on the local roads: Hoa Binh embankment road, 361 and 362 provincial roads, at the sites of Hung Dao WTP, Do Son station; ▪ <u>Impact duration</u>: mostly during installation of transmission mains; ▪ <u>Affected objects</u>: residents living along Hoa Binh embankment road, 361 and 362 provincial roads, at the sites of Hung Dao WTP, Do Son station.
6	Possible social disorder created by migrant construction	Minor	<p>Presence of migrant workers temporarily residing in local housing facilities, workers' campsite or interacting with local people in public places (i.e.: markets, local stores, entertainment places, etc.) may give rise to social problems, such as gambling, prostitution, spread of infectious diseases</p>



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
	workers		<p>(i.e.: HIV/AIDS, etc.). However this adverse impact is not significant for the following reasons:</p> <ul style="list-style-type: none"> - The Project encourages higher priority for hiring local labor (at least 30%); - Social ills are manageable with a proper selection of personnel, appropriate orientation (i.e.: social sensitivity, proper hygiene and sanitation, environment protection, etc.) prior to the deployment at site; - The Contractors will be required to properly orient their workers, especially migrants who may not be familiar with the local customs and traditions. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: workers' camp, Hung Dao ward; ▪ <u>Impact duration</u>: 24 months for construction phase; ▪ <u>Affected objects</u>: residents of Hung Dao ward and workers.
7	Risks to the public or construction workers' health and safety	Minor	<p>(i) <i>Risks on health and safety for workers</i>: Due to some component items working on roads, workers shall pose a risk of accidents by transportation means (cars, trucks, motorbikes, etc.). Such accidents include:</p> <ul style="list-style-type: none"> - Vehicles run too fast that the drivers cannot control properly, likely resulting in hitting workers; - Workers carry out work activities with their back to ongoing traffic on the roadways; - Workers work at bends on roadways and cannot be seen by drivers due to objects (houses, walls, etc.) obstructing the vision of the drivers; - Workers carry out work activities and ignore coming vehicles, thus even being hit by vehicles; - Working on Da Do River poses on workers at risks of being washing away by possible flooding. <p>(ii) <i>Risk on health and safety for local communities</i>: Effects of construction works on roads are to reduce available road width to road users, and the degree of reduction depends on the extent of the works involved, such as replacing asphalt paving surface, laying pipe, culvert works and surfacing roads, and so on. All of these road-related activities make local communities be at risk of health and safety. Such risks are as follows:</p> <ul style="list-style-type: none"> - Traffic accidents due to degradation of road surface quality that includes of road roughness (holes and broken surface produced by construction and transportation activities) and slipperiness (dropping material such as sand, gravel, soil, etc.); - Safety of local pedestrians, vehicle drivers caused by materials transportation. - An other risk in health for local communities closed to construction sites or the current drainage system damaged by construction activities is that temporary stagnant puddles



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<p>of water are likely to occur causing some problems on sanitation. Stagnant water can be a major environmental issue as it can cause mosquitoes to breed and reproduce that may lead to dengue. It also provides an incubator for many kinds of bacteria and parasites. Stagnant water is often contaminated with human and animal feces and causes bad odour to surrounding environment;</p> <ul style="list-style-type: none"> - It is projected that an increase in vehicle emissions and dust re-suspension as a result of construction activities may occur which may give rise to an increase in risk of local residents exposed to these pollutants for extended periods contracting respiratory disease. <p>The adverse impact is considered minor in view of the followings:</p> <ul style="list-style-type: none"> - Traffic volume on the project roads is very low, except for Pham Van Dong street. The main transportation means used by local communities are motorbikes; - Construction sites and workers' camp are located on open terrains where re-suspended dust and air emissions can easily be dissipated by wind; - Manageability of containing domestic wastes from workers' camp using Ministry of Health's prescribed toilet designs; - Construction machines used shall be a few. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: workers' camp, Hung Dao ward; ▪ <u>Impact duration</u>: 24 months for construction phase; ▪ <u>Affected objects</u>: people of Hung Dao ward and workers.
8	Impacts caused by temporary material storage areas	Minor	<p>Temporary storage of construction materials may result in a number of adverse impacts such as:</p> <ul style="list-style-type: none"> - Obstruction to movement of vehicles and pedestrians when these are placed within the road corridor without any fencing; - Risk to safety of motorists and pedestrians, especially at night, when there are no fencing and lighting set up; - Possible siltation of nearby waterways during rainy seasons when surface runoff washes away materials from unprotected stockpiles. <p>The adverse impact can be considered as minor since:</p> <ul style="list-style-type: none"> - Material yards can be set on the standby area of 3ha within Hung Dao WTP and the campus of Do Son station; - Location of temporary material storage yards will need to secure approval of local authorities and stakeholders; - Construction materials and wastes storage/stockpile will be properly managed to minimize occupational health and safety risks to workers and residents of nearby communities, pedestrians and motorists. <ul style="list-style-type: none"> ▪ <u>Impact location</u>: Hung Dao WTP, Do Son station, along the local roads;



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<ul style="list-style-type: none"> ▪ <u>Impact duration</u>: mostly during period of laying transmission mains; ▪ <u>Affected objects</u>: residents of Hung Dao ward and workers.
Operation Phase			
1	Chemical control	Minor	<p>During operation stage, only chlorine, lime milk and aluminum will be used as chemicals, and due to unsafe storage and handling, they may be exposed to the local environment. These chemicals, as in design, will be stored in a chemical house with appropriate safety equipment in case of emergency.</p> <p>The Project also provides metering equipments that shall control the amount of using chemical and assure that no excess of chemicals is used for water treatment process. In addition, quality of treated water will be tested every month, which supports for the operator to assess chemical residuals in water. In view of these reasons, this impact is minor.</p>
2	Sludge management	Minor	<p>In accordance with the design, the amount of sludge per day generated by operation of the WTP is about 758kg. De-sludge water coming from sedimentation tanks and backwash water coming from filters shall be stored in sludge drying beds that discharges clarified water and retains sludge. Retaining sludge then is dried and be removed out of the tanks at 3-or-4-month intervals, the estimated mount of sludge in 3 months = $757.9 \times 30 \times 3 = 68,211\text{kg}$. This dried sludge can be disposed off in the 4ha standby area within the campus of the WTP. If the area is full, we consider to transport to dumping area according to regulations.</p>
3	Water resource protection		<p>The feasibility-study team assessed pollution risks in Da Do River and its tributaries by the proposed component. It was anticipated that open defecation, grazing and non-point pollution sources from surrounding agriculture fields may cause contamination of the sources. However, the field investigation and results obtained from water samples analysis indicate that the sources are free from pollution. Regular water sample testing from the sources shall be one of the scopes for operation and maintenance service providers.</p> <p>The risks at WTP include unauthorized access and contamination if fences and defined buffer zones are not installed. Upper catchment source areas are either native lands or pastoral in nature where no fertilizer or herbicides are used. A buffer zone will be defined with at least 20m radius around the intake structure, in accordance with Decree No.43/2015/ND-CP on the establishment and management of water source protection corridors.</p>
4	Operations- & Maintenance-related issues	Minor	<p>During operation of the Component, deterioration of the transmission mains is unavoidable. Problems related to “wear and tear” of the mains, such as broken pipe, valves, meters, pumps and others, may occur. If a pipe is broken the water</p>



No.	IMPACTS	IMPACT LEVEL	DESCRIPTION OF IMPACTS
			<p>cannot flow freely and it may collapse. The most common causes of broken pipes are poor installation, age and tree roots.</p> <p>If these system maintenance problems are not detected at an early stage, bigger problems may arise and disrupt the water drainage process and cause flooding to local areas.</p> <p>The impacts however is avoidable with much vigilance of the managing unit responsible for the operations and maintenance of Hung Dao WTP, Do Son station and transmission mains.</p> <p>The transmission mains are also located on stable geologic area with no history of serious earthquakes, the risk of pipes broken by natural hazards is very low.</p> <p>In view of this, the impact is considered as minor.</p>



4 PROPOSED MITIGATION MEASURES:

4.1 GENERAL MEASURES:

25. Environmental quality of the project sites could be affected from the Project's activities during each phase of project development (pre-construction, construction and operation phases), if environmental management measures are not properly followed. This section provides the corresponding mitigation and enhancement measures to minimize, or if possible, to eliminate the identified impacts as stated in the previous sections. Mitigation measures for construction phase shall be included in the tender documents for the Contractors to include in their Bid Documents. Mitigation measures proposed to address the projected impacts identified in the previous sections are summarized in Table 6.

TABLE 6. MITIGATION MEASURES FOR THE PROPOSED COMPONENT

NO.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
Detailed Design				
1	Water use conflict	- Confirm the availability for proposal without causing negative socio-economic consequences downstream	Design Consultant	Part of consultant costs
2	Delivery of unsafe water to the system due to, among others: Inadequate consideration of raw water quality. Inadequate protection of system components from water contamination by outsiders, from damages due to existing conditions & environmental factors Easy impairments of	Use recent results of raw water quality test & findings of review on sustainability of raw water quality in design Incorporate in design the following: - Pipeline material & laying to consider environmental factors, soil, geology, climate, land use, location of sewers - Protection of buried transmission & distribution mains against corrosion caused by environmental factors - Leak detection gadgets & check valves - Review of chlorination point, that with upgrade it will allow Cl potency to sufficiently dissipate before discharge - Storage for hazardous substances to be capable of containing spillage & secure from unauthorized entry that using existing chemical house of An Duong WTP with locks and guards	Design Consultant	Part of consultant costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
	transmission mains Inadequate leak detection Inadequate design of treatment, of facilities for storage & handing of CI & other hazardous substances	<ul style="list-style-type: none"> - New treated water pumping system & reservoir to be of materials that do not adversely react with CI contact and that can absorb anticipated water pressure. <p>Ensure O&M manual specifies a grievance redress mechanism; monitoring of treated water quality as stated in this uEMP & results to be reviewed against limits set by QCVN 01:2009/BYT & current WHO guidelines for Drinking-water quality, to comply with whichever is more stringent</p>		
3	Excessive algal growth in resevoirs	<ul style="list-style-type: none"> - Design covered reservoirs - O&M Manual to specify prompt cleaning of reservoirs 	Design Consultant	Part of consultant costs
4	Inadequate, or non resurfacing of excavated roads	<ul style="list-style-type: none"> - Specify in design the surfacing of affected sections to pre-construction standard 	Design Consultant	Part of consultant costs
5	Transmission main and sewer main in same trench	<ul style="list-style-type: none"> - Coordinate with the Hai Phong Sewerage & Drainage Company. Consider the HP master plan's proposals on sewers 	Design Consultant	Part of consultant costs
6	<p>Inadequate management of wastewater, waters during constructions & operation due to inadequate:</p> <ul style="list-style-type: none"> - Assessment of capacity of diposal sites to receive construction wastes - Consideration of 	<ul style="list-style-type: none"> - include (if necessary) upgrade of existing drainage, septic tanks & wastewater management & waste storage facilities. - Estimates quantities of removed, reusable & excess soil/spoils from excavation. Specifies management on & off – site & measures to minimize spoils, confirms potential destination sites. This will form basis for Contractor's Removed soil management Plan - O&M Manual to specify implementation of an eco-friendly solid & hazadous waste management systems; for contract/s for solid/sludge/hazadous waste disposal to require the <ul style="list-style-type: none"> + disposal of collected wastes at the sanitary landfill or City-designated disposal site + prompt submission of copy of manifest from the sanitary landfill or city-designed disposal site for every disposal 	Design Consultant	Part of consultant costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
	<p>level of accessibility to basic services</p> <p>- Assessment of current practice</p>			
7	<p>Hazard from receiving, storing & using CI& other hazardous substance for O/M&R</p>	<ul style="list-style-type: none"> - Include (if necessary) upgrade of storage for chemicals, for it to WTP be more secure from unauthorized entry & can contain spillage & to specify equipment & supplies for emergent response - Adjust current O&M Manual (if necessary) to clearly specify observation of proper handling & storage of chlorine/other chemicals & to provide guidelines for emergency response. 	Design Consultant	Part of consultant costs
8	<p>Engagement of environmentally irresponsible contractor for civil works</p>	<ul style="list-style-type: none"> - An ADB-cleared and updated Subproject EMP, as part of bidding documents - Require bidders to submit detailed Contractor's EMP (CEMP) that will address as min. the requirements of Subproject uEMP. CEMPs to have (among others) plans for excavation segmentation (linked to removed soil mgnt), materials mgnt, dust control, noise & vibration control, gas emission mitigation, solid & hazardous waste mgnt, traffic mgnt (to be coordinated with authorities), occupational health & safety, grievance redress, emergency response, environmental mgnt, organization set-up, environmental monitoring, site restoration - CEMPs to be quantitatively & qualitatively evaluated against Subproject uEMP, including its environmental policy & commitment, administrative support & budget implementation. - PMU to clear CEMP of winning bid before award of Contract (ADB revised and cleared if required) - Subproject uEMP & CEMP to be appended to the contractor for civil works for compliance - Contract to require Contractor's submission of monthly environmental report, outline appended in Contract. - Contract to also stipulate the tie up of progress payment and collection of performance bond with the performance in CEMP/subproject uEMP implementation 	PMU	Haiphong Water



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
Construction Phase				
1	Disruption of commercial activities, public services, service infrastructures and reduced accessibility to private properties	<ul style="list-style-type: none"> Inform local leaders and residents about construction activities and schedules in advance through public meetings, loud speakers and information materials posted in public bulletin boards; Minimize, as much as practicable, the length of time to do pipe-laying works for every segment, without necessarily sacrificing quality of the works; Excess excavation materials to be regularly removed, or temporarily stored in suitable areas, or transported and deposited in approved disposal site; Post traffic (flags) persons during entire working hours; Limit segment lengths to what can be excavated. Laying pipes in & filling back within a day (8AM – 5PM), maximum of 30m in all roads. Segments to be property backfilled at end of each day; Store excavated materials within blocked segments of roads without endangering works or obstructing sidewalks and surface drainages. Spoils to be disposed at end of each day; Spread out schedules for materials delivery in no peak hours; At least 01 week prior to access blocking, notifying affected properties. Working together and obtaining agreements with property-owners and concerned WPCs for alternative accesses and parking areas; Provide safe accesses to blocked properties, e.g., steel planks of adequate grade, width, length, and if needed, with guide rails; During mobilization, coordinate with relevant utility companies in forming schedules of constructing along access roads & transmission main alignments. Verify exact locations of underground utility lines, and set contact arrangements in cases of damages; Prepare schedules of crossing of all existing utility lines. Ensure that a copy is available on site for reference by workers; In cases of accidental damages, advise concerned utility companies at once. Facilitate quick restoration by clearing obstruction and lending assistance (workers, equipments, tools) in the repair; 	Contractors	part of Construction Costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
		<ul style="list-style-type: none"> Give at least 01 week prior notice on planned service interruption due to relocation of existing pipelines, power supply poles, water pipes or interconnection/streamlining. 		
2	Air pollution due to dust re-suspension and exhaust gases (CO, NO _x , SO _x)	<ul style="list-style-type: none"> Water sprinkling, water fogging and broom sweeping will be carried out in dust prone locations, unpaved haulage roads, earthworks, stockpiles; Open burning of solid wastes (plastic, paper, organic matters) will be prohibited; Use of dust control methods (covers, water suppression for paved or unpaved road surfaces, or increase moisture content for open materials storage piles) will be practiced; Check licenses required by Vietnamese regulations for each type of vehicles. Undertake regular vehicle maintenance and repair program that will be implemented following strictly manufacturer manuals; Masks and personal protective equipments (PPEs) will be provided to construction workers to minimize inhalation of respirable suspended particulate matters; Air quality will be monitored during construction stage. If monitored parameters are above the prescribed limits, suitable control measures will be applied; Cover, with tarpaulin, all haul trucks carrying construction wastes and dispersible materials; Cover, with tarpaulin, material stockpiles that can be sources of dust, such as silt, sand, soil; Adjust operational procedures and institute energy conservation measures to reduce gas emission, e.g., limit engine idling to a maximum of 05 minutes, use eco-friendly air conditioners, equipments and energy-saving lights in sites/offices/accommodations, enforce conserved use of energy, reduce vehicular movements through coordinated transports of materials, spoils and wastes, closer sites for spoils reuse and sources of materials, workers' accommodations at walking distances or providing mass transport for workers, bigger capacity trucks for hauling of wastes/spoils; Use existing power poles, minimize use of generators. Use clean-fuelled generators. 	Contractors	part of Construction Costs
3	Noise caused by	<ul style="list-style-type: none"> Protection devices, such as ear plugs, ear muffs, will be provided to workers during 	Contractors	part of



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
	construction equipments and machinery	<p>periods of operating high-noise-generating machines;</p> <ul style="list-style-type: none"> Noise levels will be regularly measured to ensure effectiveness of mitigation measures; Check licenses required by Vietnamese regulations for each type of vehicle. Undertake a regular vehicle maintenance and repair program that will be implemented following strictly manufacturer manuals; Regularly inform two buildings nearby about construction schedules, by inviting their representatives to regular meetings, as well as using communication means, such as telephones, loud speakers, official letters; Restrict use of noisy equipments from 8AM to 5PM. Overtime works should not go past 10PM. Observe reduced noise level, not use noisy equipments, be coordinated with CPCs and communities; Spread out schedules of materials, spoil and wastes transport, in the day (off-peak traffic hours) or early evening; Combine alternative techniques to reduce noise, e.g., electric welders powered by remote generators, pre-fabricated structural systems for structures, off-site concrete mixing, avoiding high material drops and employing shield in drop areas; Use equipment that emit the least noise, e.g., electrically powered equipments, hydraulic tools, those with efficient mufflers; Strategically locate noise generators at minimum distance as possible from noise receptors. 		Construction Costs
4	Generation of solid waste materials from construction activities and domestic wastes from workers' campsites that require proper disposal	<ul style="list-style-type: none"> Regularly collect solid wastes from construction sites and haul out to designated disposal sites; Install rubbish collection bins at strategic locations within construction sites and workers' quarters; Establish a collection system and temporary storage areas for hazardous wastes (i.e. waste oil, grease and other petroleum products) and contract a government-licensed-service-provider to haul out materials for final disposition. Has adequate covered storage bins/containers, color-coded clearly marked to avoid mixing, especially hazardous wastes. 	Contractors	part of Construction Costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
5	Obstruction to local traffic	<ul style="list-style-type: none"> ▪ Loading of all trucks used for transporting materials and equipments shall not exceed the legal limits stipulated by GoV on, such as, road loads, speed limits; ▪ Transportation of materials and equipments shall be in accordance with all relevant requirements and regulations; ▪ Avoidance of loading and transportation of materials and equipments during daily hours (7:30 to 17:30) to avoid aggravating conditions on roads in the construction areas; ▪ Installation of proper and sufficient traffic signs; ▪ Proper supervision of drivers to ensure awareness and adherence to regulations. Control of drivers to prevent use of alcohol and drugs. The Contractors shall stipulate that such usage shall be the ground for termination of employment on the works; ▪ Install temporary access to affected properties; ▪ Notify nearby communities, factories, offices of schedules and durations of construction works; ▪ Consult with local transport departments for locations, junctions with experiences in traffic congestion. Cooperating with local departments for traffic warnings/limitation signs; ▪ Post traffic (flags) persons during entire working hours; ▪ Limit segment lengths to what can be excavated, laying pipes in & filling back in a day (8AM – 5PM), maximum of 30m in all roads. Segments to be properly backfilled at end of each day; ▪ Store excavated materials within blocked segments of the road without endangering works and obstructing sidewalks and surface drainage. Spoils to be disposed of at end of each day; ▪ Spread out schedules for materials delivery in no-peak hours. 	Contractors	part of Construction Costs
6	Possible social disorder created by migrant construction workers	<ul style="list-style-type: none"> ▪ Consult local authorities to determine possibility of renting houses for workers, instead of constructing temporary camps; ▪ Orient migrant workers on local culture and customs of the areas. Conduct seminars on personal health, sanitation and prevention of contagious diseases; ▪ Orient workers and staffs on prevention of communicable diseases, such as 	Contractors	part of Construction Costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
		HIV/AIDS, and other social issues such as smuggling, prostitution, violence and theft.		
7	Risks to the public or construction workers' health and safety	<p><i>Safety at sites:</i></p> <ul style="list-style-type: none"> ▪ Designate Safety Officers responsible for enforcing workplace health and safety protocols measures. Train workers and key staffs on first-aid and emergency response procedures, including for fire-fighting; ▪ Provide personals with required protective and safety equipments for workers (i.e. safety helmets, gloves, safety belt); ▪ Installation of site regulation boards; ▪ Erect fences to limit access into work areas; ▪ vi) Prohibit dredging activities during raining days and two days after. <p><i>Risk reduction during material transport:</i></p> <ul style="list-style-type: none"> ▪ Install speed limit signs along roads. Ensure that traffic regulations are complied, especially in residential areas and at intersections; ▪ The Contractors should, in regular meetings, notify of construction schedules and traffic safety risks; ▪ Minimize material transport during rainy days. Avoid overloading of transport vehicles beyond capacity of existing roads and bridges; ▪ Promptly repair damaged road sections. 	Contractors	part of Construction Costs
8	Impacts caused by temporary material storage areas	<ul style="list-style-type: none"> ▪ Inventory of materials in temporary storage areas, especially along road alignments under upgrading or adjacent areas, shall only be stored enough for projected works, thus preventing overstocking and minimizing road obstruction; ▪ Properly store materials to minimize obstructions to vehicles and pedestrians passing through construction areas; ▪ Provide security fences around construction sites including temporary material storages to limit access into the areas; ▪ Fair compensation shall be paid to the owners of lands used as temporary storage areas for materials and wastes. Damaged assets shall be immediately restored after completion of works and prior to demobilization of the Contractors. 	Contractors	part of Construction Costs



No.	IMPACTS/CONCERNS	MITIGATION MEASURES	RESPONSIBILITY	COSTS
Operation Phase				
10	Chemical control	<ul style="list-style-type: none"> Provide safe storages for chemical/hazardous substances, with caution signs & secure from unauthorized entry, can contain spills; Implement proper housekeeping of premises, strict observance sanitation practices, eco-friendly waste management system; Competent and cautious handling and transport of chlorine. Qualified persons for implementing disinfection; Quickly response to chemical/hazardous substances or wastes spills; Mechanism for quick response to chemical/hazardous substances; Monthly physical examination of staffs handling Cl and other chemicals/hazardous substances. 	WTP operator	Haiphong Water
11	Sludge management	<ul style="list-style-type: none"> Check pH level of dried sludge every 03 months prior its disposed-off; Arrange particular areas within the standby 4ha for this dried sludge, and if possible, growing trees or vegetation on these areas. 	WTP operator	Haiphong Water
12	Water resource protection	<ul style="list-style-type: none"> Define a buffer zone with at least 20m radius around the intake structure, in accordance with Decree No.43/2015/ND-CP, by warning signs. Organize public meetings to inform the buffer zone to local residents; Assign regular staffs to monitor this buffer zone every day. 	WTP operator	Haiphong Water
13	Operations- and Maintenance-related issues	<ul style="list-style-type: none"> Contingency plans on where to source treated water in a case of failure of the connected WTP source; Sufficient budget for O/M&R and EMP implementation. 	WTP operator	Haiphong Water



5 ENVIRONMENTAL MONITORING PROGRAMS:

26. Monitoring requirements are set out in the EMP and summarized in Table 7. The Environmental Monitoring Program for the Component would include: (1) monitoring the uEMP compliance, and (2) monitoring of environmental impacts caused by the activities attendant to the execution of works for the Component activities with major concentration on construction.
27. Environmental Impact Monitoring will be implemented with major concentration during the construction phase where most of the adverse impacts are projected to occur. It is conducted to evaluate the impacts by the Component activities on ambient environmental quality and determine the extent of variations and changes in the levels of pollutants in the environment and other parameters and indicators considering the implementation and operation of the Project. Environmental performance monitoring is conducted to evaluate compliance with the standard operating procedures, national standards on environment and technical specifications. The main purpose of environmental performance monitoring is to ensure that all proposed mitigation measures are established and complied with by Contractors during construction phase.
28. The matrix also indicates the parties responsible for the implementation of each item and the cost for implementation and establishment of mitigating measures. During construction phase, the Contractors are the responsible entity in the implementation of the uEMP. All costs attendant to the implementation of the uEMP will be included in the respective contracts of the Contractors with Haiphong Water. During operation and maintenance phase, the operational unit of Haiphong Water shall be responsible for the monitoring of the uEMP for the first year of operation of the Project. Costs attendant to this tasks shall be included in the Project's budget. Parties concerned in the implementation of the EMP such as the Contractors, Haiphong Water, PMU and other stakeholders shall be provided with requisite trainings and basic knowledge on environmental monitoring. They will also be oriented on preparation of the Contractor's Environmental Management Plan (CEMP), preparation of Environmental Monitoring Reports (EMRs) and conduct of environmental quality monitoring.
29. Environmental specialists (ESs) of the Project's Management Consultant (PMC) shall be engaged for 02 years during construction phase and for 01 year during operation phase to assist Haiphong Water in all environmental and safety issues. Budget for these specialist will be included in the contracts for project management consultants, and attendant costs shall be provided accordingly.

TABLE 7. ENVIRONMENTAL EFFECTS MONITORING PLAN

IMPACTS	INDICATORS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
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IMPACTS	INDICATORS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Construction Phase							
Disruption of commercial activities, public services, service infrastructures and reduced accessibility to private properties	<ul style="list-style-type: none"> Number of commercial households/public and private properties affected; Time of affection; Magnitude of affection (disruption or reduced accessibility). 	On Hung Dao ward, residential areas along transmission roads	Observation; Interview.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts
Air pollution due to dust re-suspension and exhaust gases (CO, NO _x , SO _x)	Microclimate, TSP, SO ₂ , CO, NO ₂ , VOC, ODS	Hung Dao WTP, Do Son BPS and active transmission segments	Observation; Interview; Grab-sampling and comparison with QCVN 05-2009/BTNMT.	2× monthly during peak-construction periods; once per month during non-peak periods.	Contractors	PMC/PMU	Included in Construction Contracts
Noise caused by construction equipments and machinery	Review noise, vibration levels against QCVN 26/2010-BTNMT	Hung Dao WTP, Do Son BPS and active transmission segments	Observation; Interview; Grab-sampling and comparison with QCVN 26/2010-BTNMT.	monthly during construction period	Contractors	PMC/PMU	Included in Construction Contracts
Dredging material and related impacts	<ul style="list-style-type: none"> Volume of dredging materials; Volume of reused excavated materials; Volume of disposal unsuitable materials. 	The standby 4ha; On roads-laying transmission mains.	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts



IMPACTS	INDICATORS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Generation of solid wastes from construction activities and domestic wastes from workers' campsites that require proper disposal	<ul style="list-style-type: none"> Volume of construction spoils and debris delivered to disposal sites; Cleanliness and sanitation in camps and field offices. 	Construction sites; Workers' campsites.	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts
Obstruction to local vehicle traffic	<ul style="list-style-type: none"> Number of traffic accidents related to construction activities and reasons; Complaints from adjacent communities; Time of traffic congestion. 	Construction sites; Workers' campsites.	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts
Possible social disorder created by migrant construction workers	<ul style="list-style-type: none"> Number of migrant workers; Number of workers staying in camp sites or renting local households; Health certificates on none of communicable diseases. 	Hung Dao wards; Residential areas along transmission mains.	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts
Occupational health and safety risks to construction workers and local	<ul style="list-style-type: none"> Number of work stoppages due to work-related accidents; Number of construction 	Hung Dao wards; Residential areas along	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts



IMPACTS	INDICATORS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
residents living near the Project's roads	site accidents involving local residents; <ul style="list-style-type: none">Complaints by local residents related to actions by construction workers.	transmission mains.		Monthly	PMC	PMU	Included in PMC's Contracts
Impacts from the establishment of temporary material storage, i.e. dust, contamination of waterways, traffic congestion, increased risk for accidents, etc.	<ul style="list-style-type: none">Number of accidents involving temporary material storage activities;Complaints by local residents, factories nearby;Hours of delay in travel time due to operation of temporary material storage areas.	Temporary materials-storage areas	Observation; Interview; Data collection.	Monthly	Contractors	PMC/PMU	Included in Construction Contracts
				Monthly	PMC	PMU	Included in PMC's Contracts
Operation Phase							
Chemical control	<ul style="list-style-type: none">Supplied water quality;109 parameters indicated in QCVN:2009/BYT;Incidence of water-borne diseases, such as diarrhea, crypto, hepatitis A, typhoid fever, amoebiasis, gastroenteritis, etc.;Employee's health and safety, particularly of those handling chemicals/hazardous	Hung Dao WTP, Do Son BPS, Consumer pts.	Take samples	Weekly	Operational Unit/Enterprise	Haiphong Water	C/o Operation runing cost



IMPACTS	INDICATORS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
	substances.						
Sludge management	<ul style="list-style-type: none"> Volume of dried sludge; Status of trees, vegetation growing on the area, on which dried sludge is disposed. 	4ha standby area within Hung Dao WTP	Observation; Interview; Data collection.	Every 03 months	Operational Unit/Enterprise	Haiphong Water	C/o Operation running cost
Water resource protection	<ul style="list-style-type: none"> Warning board, signs at the buffer zone; Agricultural or breeding activities in the buffer zone. 	The buffer zone of Hung Dao WTP	Observation; Interview; Data collection.	Monthly	Operational Unit/Enterprise	Haiphong Water	C/o Operation running cost
Operations- and Maintenance-related issues	<ul style="list-style-type: none"> Maintenance scheduler; Volume of broken parts. 	Hung Dao WTP, Do Son BPT and transmission mains	Observation; Interview; Data collection.	Monthly	Operational Unit/Enterprise of drainage system		Local budget

5.1 ENVIRONMENTAL QUALITY MONITORING PROGRAM:

30. Table 8 and Table 9 describe the locations of water, air and noise quality monitoring stations, parameters to monitor, frequency and purposes of monitoring.

TABLE 8. WATER QUALITY MONITORING PROGRAM

NO.	LOCATION	MONITORING PROPOSES	CRITERIA	FREQUENCY	RESPONSIBILITY
Pre-construction Phase					



NO.	LOCATION	MONITORING PROPOSES	CRITERIA	FREQUENCY	RESPONSIBILITY
1	At the intake location on Da Do River	Baseline for impact assessment during construction and operation phases	QCVN 08-2008/BTNMT	Once	PMU
2	20m downriver from the intake structure on Da Do River	Baseline for impact assessment during construction and operation phases	QCVN 08-2008/BTNMT	Once	
Construction Phase					
1	At intake location on Da Do River	Impact assessment of the construction process by comparison with QCVN in case of carrying out construction activities	QCVN 08-2008/BTNMT	2× monthly during construction of the intake structure	Contractors
2	20m downriver from the intake structure on Da Do River	Impact assessment of the construction process by comparison with QCVN	QCVN 08-2008/BTNMT	2× monthly during construction of the intake structure	
Operation Phase					
1	After BPS flow meter	Assessment of water quality after treatment	QCVN 01-2009/BYT; color, smell, turbidity, pH, hardness, Cl, Fe, Mn, NO ₃ , NO ₂ , SO ₄ , DO, Cl residuals, coliform, e-colo	weekly	Water quality control department
2	Consumer points	Assessment of treated water quality after transmission mains	QCVN 01-2009/BYT; color, smell, turbidity, pH, hardness, Cl, Fe, Mn, NO ₃ , NO ₂ , SO ₄ , DO, Cl residuals, coliform, e-colo	weekly	
3	After BPS flow meter	Assessment of water quality after treatment	QCVN 01-2009/BYT; TDS, Al, NH ₄ , As, F, H ₂ S, Pb, Hg, Na	semi-annually	



NO.	LOCATION	MONITORING PROPOSES	CRITERIA	FREQUENCY	RESPONSIBILITY
4	Consumer points	Assessment of treated water quality after transmission mains	QCVN01-2009/BYT; TDS, Al, NH ₄ , As, F, H ₂ S, Pb, Hg, Na	semi-annually	
5	After BPS flow meter	Assessment of water quality after treatment	QCVN 01-2009/BYT; The remaining 78 parameters of QCVN 01-2009/BYT, except for the above parameters.	Once every 02 years	
6	Consumer points	Assessment of treated water quality after transmission mains	QCVN 01-2009/BYT; The remaining 78 parameters of QCVN 01-2009/BYT, except for the above parameters.	Once every 02 years	
7	At intake location on Da Do River (upstream)	Assessment of water river quality	QCVN 08-2008/BTNMT	Twice every year	

TABLE 9. AIR & NOISE QUALITY MONITORING PROGRAM

NO.	LOCATION	MONITORING PROPOSES	CRITERIA	FREQUENCY	RESPONSIBILITY
Pre-construction Phase					PMU
1	The site for Hung Dao WTP	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Once	
2	The site for Do Son BPS	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Once	
3	On a local road of Hung Dao ward	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Once	
Construction Phase					



NO.	LOCATION	MONITORING PROPOSES	CRITERIA	FREQUENCY	RESPONSIBILITY
1	The site for Hung Dao WTP	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Monthly	Contractors
2	The site for Do Son BPS	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Monthly	
3	On active transmission mains	Baseline for impact assessment during construction and operation phases	QCVN 05-2009/BTNMT	Monthly	

5.1 ENVIRONMENTAL COMPLIANCE MONITORING PROGRAM:

31. In addition to the Environmental Quality Monitoring Plan, the uEMP also includes an Environmental Compliance Monitoring Plan for implementation of the mitigation measures. This plan will be implemented during construction and operation phases to ensure that the mitigation measures proposed in the uEMP will be implemented and complied with by all parties concerned. Table 10 presents the Environmental Compliance Monitoring Plan for the component.

TABLE 10. ENVIRONMENTAL COMPLIANCE MONITORING FRAMEWORK PLAN

MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
PRE-CONSTRUCTION PHASE						
1. Preparation of the Detailed Design:						
Completion of Detailed design, incorporated with EMP requirements		Review of detail design documents	Once, prior to finalization	Design Consultant	PMU/ Haiphong Water	Included in design consultant contract
Adjusted or update O&M Manual, incorporated with EMP requirements		Review of O&M Manual	Once, prior to approval			



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
2. Obtaining Approvals & Community Preparation:						
Finalization of the Environment Protection Plan (EPP), based on the IEE & its uEMP	For the Component	Review of the EPP	Once, draft final design	PMU/ Haiphong Water	PMU/ Haiphong Water	
EPC registered with & certified by DPC	For the Component	Verification of the DPC-approved/ certificated EPP for the Component	Once, at least 30 days prior to contract award			
Intensive Awareness Program on communicable/ transmittable diseases conducted in all wards	All wards concerned of Hung Dao WTP, Do Son BPS	Review of relevant reports of PMU's social & communication groups	Once, at least 30 days prior to contract award			
3. Procurement:						
Procurement process to comply with the uEMP's requirements: the ADB-cleared uEMP shall be a part of bidding documents		Verifying if the uEMP is a part of bidding documents	Once, prior to procurement	PMU/ Haiphong Water	PMU/ Haiphong Water	
Procurement requires CEMPs of all bidders to be based on the uEMP, addressing its requirements as minimum criteria, and particularly to include (but not limited to) plans for: - aggregates management, excavation management (linked to removed soil management); - dust, noise, vibration, water quality controls, gas		Review of procurement requirements	Once, prior to procurement	PMU/ Haiphong Water	PMU/ Haiphong Water	



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
emission mitigation, solid and hazardous waste management; - traffic management (to be coordinated with relevant local authorities); - occupational health and safety; - grievance redress; - emergency responses; - environmental monitoring and reporting.						
Quantitative and qualitative evaluation of CEMPs against the uEMP as an integral component of bid evaluation		Review of evaluation criteria and scoring	Once, during procurement	PMU/ Haiphong Water	PMU/ Haiphong Water	
Final CEMP to be incorporated with PMU's/Haiphong Water's and ADB's comments		Review of the final CEMP	Once, prior to contract award	PMU/ Haiphong Water	PMU/ Haiphong Water	
CEMP/uEMP compliance is stipulated in the Contract		Review of the Work Contract	Once, prior to finalization	PMU/ Haiphong Water	PMU/ Haiphong Water	
The Work Contracts shall stipulate a tie-up between the schedule of progress payments and the collection of performance bond with performance in CEMP/EMP implementation		Review of the Work Contract	Once, prior to finalization	PMU/ Haiphong Water	PMU/ Haiphong Water	
CONSTRUCTION PHASE						
4. Implementation of CEMP (uEMP):						
Exposed areas are confined within staking plan boundaries.	All sites	- Field observation vis-à-vis CEMP	Combination of regular &	Contractors	PMC/PMU	Included in Civil



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
<p>Unpaved surfaces and soil stockpiles are watered as prescribed.</p> <p>Wind barriers are strategically installed at sand/soil stockpiles.</p> <p>Speed limit of 10kph in component sites are observed.</p> <p>Low-drop heights are applied when loading/unloading soil onto trucks/ground; soil is kept moist by water spraying.</p> <p>Equipment engines do not left idling for more than 5 minutes.</p>		<p>and CEMR;</p> <ul style="list-style-type: none"> - Consulting adjacent residents; - Reviewing lodged grievances. 	random spot checks			Works contracts and PMC's contracts
<p>Adequate and well-kept sanitation facilities are maintained.</p> <p>Workers must observe good sanitation practices.</p> <p>No noisy or vibrating equipments shall operate from 5PM to 8AM.</p> <p>Overtime works are only up to 10PM.</p> <p>The sites are cleared of wastes and soil residuals after day's work.</p> <p>Separate storages are prepared for solid and hazardous wastes, enclosed and able to contain spills.</p> <p>Reflectorized guides, signage and markers are</p>	All sites	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; - Reviewing lodged grievances. 	Combination of regular & random spot checks	Contractors	PMC/PMU	Included in Civil Works contracts and PMC's contracts



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
<p>installed to direct vehicular traffics.</p> <p>Construction vehicles/equipments are parked appropriately.</p> <p>Aggregates are stockpiled only in designated areas.</p> <p>Visible signages on truck speed limit and truck designated lanes are installed in strategic locations.</p> <p>Pumped water from excavation is led to drainage (natural or man-made) or a water drum/tank.</p> <p>Diversion of impeded surface runoff routes is provided.</p>						
<p>Stockpiles of aggregates and spoils are placed away from surface drainage routes.</p> <p>Service interruption plans are informed to communities at least 01 week prior to their effectiveness.</p> <p>Energy conservation measures are adopted.</p>	All sites	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; - Reviewing lodged grievances. 	Combination of regular & random spot checks	Contractors	PMC/PMU	Included in Civil Works contracts and PMC's contracts
<p>Waste reduction, segregation, reuse and recovery, together with proper waste storages and disposal are implemented.</p>	All sites	<p>Reviewing manifests from landfill and junk-shops for disposal or delivery of</p>				



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
		wastes				
Construction equipments and tools are promptly maintained to manufacturer's specifications.	All sites	Verifying manufacture's specifications and maintenance records				
Emergency Preparedness: - Emergency Response Team are adequately staffed, trained and well-equipped; - Coordination with external emergency response teams are encouraged actively; - Emergency drills are conducted at least every 02 months.	All sites	Reviewing minutes of coordination				
Exposed areas which are not in immediate working, are covered.	BPS site	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; - Reviewing lodged grievances. 	Combination of regular & random spot checks	Contractors	PMC/PMU	Included in Civil Works contracts and PMC's contracts
Open excavations are carried out with adequate lighting, appropriate cover and/or reflectorized barriers, when not in working.						
Road excavations are properly backfilled after day's work.						
Unsurfaced backfilled road sections are overlain with crushed gravel and with reflectorized warning sign.	Transmission main alignment					
Affected road sections are resurfaced as soon as possible to pre-excavation standards.						



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Affected road sections in each day's work are limited to: working lanes, about 50m long in minor roads .						
Information on existing alignments of utilities is available on sites for crew's read reference/guide		Verifying presence of information on site				
Traffic management scheme is coordinated with the WPCs.		Verifying minutes of coordination				
Billboards informing road/lane closure and traffic re-routing plan are installed strategically at least 02 weeks before effectiveness.	Transmission main alignment	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; - Reviewing lodged grievances. 				
At least 02 traffic (flag) persons are positioned on each end of affected road sections, at 8AM – 5 PM and during overtime.	Transmission main alignment	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; - Reviewing lodged grievances. 	Combination of regular & random spot checks	Contractors	PMC/PMU	Included in Civil Works contracts and PMC's contracts
Blocked accesses are accompanied with alternative safe accesses, i.g., steel planks of adequate grade, width and length, guide rails, etc.						
Safety measures are implemented in pagodas and school areas, while coordinated with respective authorities.	Transmission main alignment	<ul style="list-style-type: none"> - Field observation vis-à-vis CEMP and CEMR; - Consulting adjacent residents; 				
Safe accesses are provided to pedestrians.						



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Trucks hauling fine aggregates and cement must be well covered.		- Reviewing lodged grievances.				
Trucks hauling chemicals and wastes must be well covered.						
Materials deliveries should take place in non-peak hours.						
Environmental effects monitoring is conducted as prescribed in the CEMP/uEMP: air quality, noise, vibration, incidence of community diseases, accidents, crimes, incidence of diseases among and crimes and accidents involving construction workers.	All sites and all wards concerned	- Verifying and review results of quality and level monitoring; - Verifying and review, data or records.	Monthly	Contractors	PMC/PMU	
Environment Monitoring Reports are submitted on monthly basis.		Verifying and review EMRs	Monthly	Contractors, PMC	PMU	
OPERATION PHASE						
5. Implementation of the components' uEMP:						
Permits for operation are obtained and renewed accordingly.	BPS, WTP	Verifying permits and their renewals	Combination of regular & random spot checks until loan closure	Operational Unit/ Enterprise	PMU	Operating budget
Certificates for water exploitation are obtained accordingly.		Verifying certificates				
Contingency plans for alternative water supply during emergency are drafted and approved.		Verifying contingency plans				



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Final (and/or adjusted) O&M Manual is incorporated with uEMP requirements.		Reviewing final O&M Manual				
Eco-friendly waste and sludge management are implemented.						
Handling and management of hazardous substances are in accordance with safety rules in the O&M Manual.		Reviewing records for accidental spill events and injuries				
Caution signage on hazardous substances must be visible in strategic locations.						
Housekeeping and sanitation are strictly enforced and practiced.						
Septic tanks are promptly de-slugged.		Reviewing records of de-sludging				
Emergency Preparedness: - Emergency Response Team are adequately staffed, trained and well-equipped; - MSDS of all chemicals used, spill kits are readily accessible; - Coordination with external emergency response teams are encouraged actively; - Emergency drills are conducted at least every 02 months.	BPS, WTP	Verifying minutes of coordination	Combination of regular & random spot checks until loan closure	Operational Unit/ Enterprise	PMU	Operating budget
Components of the system are inspected on regular bases.		Verifying inspection records				



MISSIONS & PARAMETERS	LOCATION	METHOD	FREQUENCY	RESPONSIBILITY	COMPLIANCE MONITORING	COST
Physical examination of staffs who handling CI and other hazardous substances takes place monthly.		Verifying clinic records				
Leaks are detected and acted on promptly.		Verifying leak repair records				
Sufficient budget is sustained for O/M&R and uEMP implementation, emergency preparedness and responses.		Verifying records of drills and budget				
Environmental effects monitoring is conducted as prescribed in the uEMP		Verifying inspection records				
Supplied water, incidence of community water-borne diseases, incidence of work-related injuries, accidents and illnesses are observed.	Serviced areas, BPS, WTP	<ul style="list-style-type: none"> - Verifying and reviewing results of quality and level monitoring; - Verifying from district health offices; - Verifying operational records. 	Semiannual	Operational Unit/ Enterprise	PMU	Operating budget
Environment Monitoring Reports are submitted on semiannual basic.		Verifying and review EMRs				



6 INSTITUTIONAL ARRANGEMENTS & ORGANIZATION:

6.1 RESPONSIBILITIES OF STAKEHOLDERS:

32. Responsibilities of relevant parties are shown in Table 11. These are classified based on 03 general phases of the Project, namely: Pre-construction, Construction and Operation phases respectively.

TABLE 11. RESPONSIBILITIES OF STAKEHOLDERS & CONCERNED PARTIES

ENTITY	ROLES AND RESPONSIBILITIES		
	PRE-CONSTRUCTION PHASE	CONSTRUCTION PHASE	OPERATION PHASE
Haiphong Water (as well as PMU)	<ul style="list-style-type: none"> Oversee the incorporation of EMP recommendations into the design, bid documents and O&M Manuals, the finalization of the Component EMPs and, if applicable, the revision of IEEs; Ensure procurement of environmentally responsible contractors; Ensure that all necessary approvals (e.g.: Environmental Protection Commitment registration and certification, construction permits) are secured prior to civil work contract award; Set up baseline ambient qualities and levels of air, noise and vibration in component sites, and baseline statistics on incidence of diseases in concerned WPCs; Conduct an intensive awareness campaign on health and safety impacts of the Component's implementation, in 	<ul style="list-style-type: none"> Conduct inspections and spot checks to monitor performance of the Contractors in implementing ADB-cleared CEMP; Review results of air quality, noise and vibration monitoring conducted by the Contractors; Oversee and monitor management and resolution of grievances as well as effectiveness of the established grievance redress mechanism; Collect and review monthly EMRs from the Contractors, then preparing and submitting semi-annual EMRs to ADB; A Grievance Point Person (GPP) shall oversee observance of the grievance redress mechanism and prepare semi-annual grievance redress reports as an input to semi-annual Component EMRs. 	<ul style="list-style-type: none"> Conduct quality tests for Sai River downstream and upstream waters. The results shall be used for baseline data; Conduct tests in quality of water to be distributed for application of permits for operation; Apply for and obtain permits for operation; Operation Units/Enterprises (OE) shall be responsible for: <ul style="list-style-type: none"> i) setting up a team to manage EMP implementation and reporting; ii) implementing mitigation and protection measures specified in the Component's EMP, O&M Manuals and other relevant documents;



ENTITY	ROLES AND RESPONSIBILITIES		
	PRE-CONSTRUCTION PHASE	CONSTRUCTION PHASE	OPERATION PHASE
	<p>coordination with Department of Health and WPCs, and on the grievance redress mechanism;</p> <ul style="list-style-type: none"> Review Final CEMP of the winning or selected Contractors, and submitting to ADB for review and clearance; Prepare monthly inputs for incorporation into Detailed Design Monthly Progress Report. 		
ADB	<ul style="list-style-type: none"> Review bid documents, which including the incorporation of EMP recommendations, Component IEEs, the Component's EMPs, results of CEMP evaluation of CEMPs, and the Final CEMP of the winning or selected Contractors. Issue required clearances or No-objection Letters (NOL) accordingly. 	ADB shall review submitted semi-annual EMRs by Haiphong Water and carry out annual environmental review missions during construction.	ADB shall review submitted semi-annual EMRs by Haiphong Water and carry out environmental review missions during operation until loan closure.
Design Consultants	<ul style="list-style-type: none"> Incorporate all EMP requirements and recommendations into the Component's detail designs, bid documents and O&M Manual; Finalize the Component EMPs, and if applicable, IEEs; Prepare and finalize EIA Reports based on the IEEs and EMPs. 	Not applicable	Not applicable
Local authorities	<ul style="list-style-type: none"> DPCs of Do Son and Duong Kinh shall approve/certify the registration of the 	<ul style="list-style-type: none"> WPCs shall be involved in grievance resolution pursuant to grievance redress 	<ul style="list-style-type: none"> DPCs of Do Son and Duong Kinh, together with their DNREOs shall review



ENTITY	ROLES AND RESPONSIBILITIES		
	PRE-CONSTRUCTION PHASE	CONSTRUCTION PHASE	OPERATION PHASE
	<p>Component EPP based on recommendation of their DNREO;</p> <ul style="list-style-type: none"> Concerned WPCs shall be involved in: (i) public disclosure of the Component IEEs, uEMP and EMRs; (ii) community awareness program on health and safety impacts of the Component implementation; and (iii) establishment of baseline environmental data prior to construction. 	<p>mechanism.</p>	<p>EMRs and results of environmental monitoring by the Oes;</p> <ul style="list-style-type: none"> Concerned WPCs shall review EMRs and results of environmental monitoring by the OEs. They shall be responsible for disseminating highlights of EMRs and findings of water quality tests to their communities. They shall also be involved in grievance resolution following the grievance redress mechanism; DOH shall review application for permit for operation, including results of treated water quality test, and then issuing the permit for operation; DONRE shall conduct validation and provide technical guidance on environmental effects and quality monitoring, when necessary.
Project Management Consultants (PMC)	<ul style="list-style-type: none"> Provide initial trainings to the Implementing Agency and its PMU's offices on purposes, content, roles and responsibilities in implementation of uEMPs; Ensure that all relevant safeguards of the cleared uEMPs are adequately addressed in the bidding documents. 	<ul style="list-style-type: none"> Conduct inspections and spot checks in monitoring performance of the Contractors in implementing the ADB-cleared CEMP; Review results of air quality, noise and vibration monitoring conducted by the Contractors; Collect monthly EMRs from the Contractors, preparing and submitting semi-annual EMRs to Haiphong 	<ul style="list-style-type: none"> Preparing semi-annual EMRs; Conduct inspections and spot checks to monitor performance of the OEs in EMP implementation; Review results of water quality monitoring conducted by the OEs; Prepare and submit semi-annual EMRs to Haiphong Water/PMU and ADB until loan closure.



ENTITY	ROLES AND RESPONSIBILITIES		
	PRE-CONSTRUCTION PHASE	CONSTRUCTION PHASE	OPERATION PHASE
		<p>Water/PMU and ADB;</p> <ul style="list-style-type: none"> Oversee and monitor the management and resolution of grievances and effectiveness of the grievance redress mechanism; The Grievance Point Person (GPP) shall oversee observance of the grievance redress mechanism and prepare semi-annual grievance-redress reports as an input to semi-annual Component EMRs. 	
Contractors	<ul style="list-style-type: none"> The winning/selected Contractors shall finalize CEMP, which inputs comments from Haiphong Water/PMU and ADB, for review and ADB clearance; Organize disclosure of the Component's information before commencement of works. 	<ul style="list-style-type: none"> Engage or mobilize engineers to manage the CEMP's implementation and reporting; Implement all environmental mitigation and protection measures, conduct environmental monitoring activities and ensure preparedness for emergency responses, as provided in the ADB-cleared CEMP; Observe the grievance redress mechanism in addressing complaints; Prepare monthly and semi-annual CEMRs. 	Implement maintenance process and tasks.

6.2 REPORTORIAL REQUIREMENTS:

33. All environmental monitoring reports which address implementation of the CEMP and uEMP during the entire Component and Project cycle shall be prepared regularly, as stipulated in the uEMP. They shall be submitted in timely manner to related GoV agencies, ADB and other stakeholders. Reporting requirements are presented in Table 12 below.



TABLE 12. REPORTORIAL REQUIREMENTS FOR THE COMPONENT

PHASE	TYPES OF REPORT	FREQUENCY	RESPONSIBILITY	MONITORING/ APPROVAL
Pre-construction	CEMP from bidders, based on the ADB-cleared uEMP as minimum requirements, include, but not limited to, plans for the following issues: aggregates management, excavation management (linked to removed soil management); – dust, noise and vibration, water quality controls; – gas emission mitigation, solid and hazardous waste management; – traffic management (to be coordinated with local authorities); – occupational health and safety; – grievance redress; – emergency responses; – environmental monitoring and reporting.	Once, prior to construction contract finalization	Contractors	PMC and Haiphong Water/PMU
Construction	Contractors' Environmental Monitoring Reports (CEMRs): indicating (i) compliance with the CEMP approved in pre-construction stage, (ii) problems encountered and corrective actions taken to address issues and concerns.	Monthly	Contractors	PMC and Haiphong Water/PMU
	EMRs for the CEMP implementation: presenting clearly monitoring activities to assess compliance of the Contractors' implementation with their CEMP. These reports should include: (i) mitigation measures proposed by the Contractors; (ii) monitoring indicators; (iii) measures to assess efficiency; (iv) problems encountered and corrective actions taken to address issues and concerns.	Monthly	PMC	Haiphong Water/PMU
	EMRs for the uEMP implementation: presenting clearly monitoring activities to assess compliance of all stakeholders' implementation and actions with the uEMP. These reports should include: (i) main impacts; (ii) proposed measures; (iii) efficiency assessment for the uEMP; and (iv) updating of the uEMP, if necessary.	Semiannual	PMC, Haiphong Water/PMU	Haiphong Water/PMU, ADB
Operation	Monitoring reports (OEMR) for the uEMP implementation.	Semiannual, until loan	PMC, OE	Haiphong Water/PMU,



PHASE	TYPES OF REPORT	FREQUENCY	RESPONSIBILITY	MONITORING/ APPROVAL
		closure		ADB

6.3 IMPLEMENTATION SCHEDULE:

34. Environmental management shall be implemented from detailed design phase through procurement, construction, and to operation phase (until the loan closure). Table 13 presents the indicative time frame for key EMP activities in relation to the Component implementation schedule.

TABLE 13. IMPLEMENTATION SCHEDULE

ACTIVITIES	INDICATIVE TIME FRAME
A – COMPONENT IMPLEMENTATION	
Detailed Design	Q1/2015 – Q1/2016
Procurement	Q2/2016 – Q1/2017
Preparation of bids and bid submission	April 2016 – July 2016
Evaluation of bids and preparation of Bid Evaluation Reports	July 2016 – Sep 2016
ADB review of Bid Evaluation Reports	Sep 2016 – Nov 2016
Clarification meetings and HPCPC Approval	Nov 2016 – Jan 2017
Construction	Q2/2017 – Q1/2019
Star-up & Commissioning	Q1/2019 – Q4/2019
B – ENVIRONMENTAL MANAGEMENT	
Overall	
1. Project Management Consultant (PMC) – engagement of environmental specialists	Q3/2016 – Q3/2019 (at latest)
2. Submission of Environmental Monitoring Reports (EMRs)	Q2/2017 – Q1/2019; Q3/2019 – Project completion.
– Monthly EMR for incorporation in the Component's monthly Progress Reports;	1st week after effective month
– Semi-annual EMRs for submission to ADB by Haiphong Water	1st week after effective 6th month
Prior to Construction	
1. Incorporation of the uEMP recommendations into detail design, O&M Manuals and bid documents	Q3/2015 – Q1/2016
2. Finalization of the uEMP, obtaining ADB clearance	Q2/2016
3. Evaluation of the Contractors' EMPs (CEMPs) against the Component EMP	Q3 – Q4/2016
4. ADB reviewing of bid evaluation results and CEMPs	Q4 – Q1/2017
5. Finalization of the CEMP from the winning/selected Contractors to obtain approval from Haiphong Water/PMU, local authorities and ADB	One month after contract award, the final CEMP shall be submitted by the winning Contractors to



ACTIVITIES	INDICATIVE TIME FRAME
	PMU and ADB for approval
6. Obtaining any required approval, agreements and permits, including: approval for EPP report, permit for construction, and so on	Shall be done by early Q1/2017 (prior to award of contract for civil works)
7. Community preparation for the Component	Shall be done by early Q1/2017 (prior to award of contract for civil works)
8. Establishment of baseline data regarding to ambient water quality, air quality, noise and vibration levels in component sites, and incidence of diseases (communicable, transmittable, water-borne, etc.) at commune levels	Shall be done by early Q1/2017 (prior to award of contract for civil works)
9. Compensation and/or replacements due to land or ROW acquisition	C/o Resettlement Plan
Construction	
1. Implementation of mitigation measures and conduct of environmental effects monitoring following the ADB-cleared CEMP	Q2/2017 – Q1/2019
2. Submission of the Contractor's Environment Monitoring Reports (CEMRs)	Q2/2017 – Q1/2019
– Monthly CEMRs for incorporation in Monthly Construction Progress Reports by the Contractors and PMC to PMU	At the end of each month
– Semi-annual CEMRs for incorporation in overall semi-annual Component EMRs to be submitted to ADB by Haiphong Water	At the end of every 6 months
Startup & Commissioning	
1. Obtaining permit for water exploitation	Q1/2019
2. Establishing baseline data for ambient quality of upstream water from Da Do river	Q1/2019
Full Operation (may start before defect liability period is over)	
1. Implementation of mitigation measures and monitoring activities, as specified in the Component EMP	Starting Q2/2019
2. Submission of the OE's Environment Monitoring Reports (OEMRs)	Starting Q2/2019
– Semi-annual OEMRs for incorporation in overall semi-annual EMRs of the Component to be submitted to ADB	At the end of every 6 months until loan closure



6.4 TRAINING AND CAPACITY BUILDING:

35. Training programs shall be organized in order to implement the above-mentioned compliance monitoring plans. These programs aim to enhance the capacity of stakeholders in environmental assessment, management and protection. Table 14 below presents the training program designed for the Component.

TABLE 14. TRAINING & CAPACITY BUILDING PROGRAM

CONTENT		PARTICIPATION	NUMBER OF TRAINEES	EXPECTED SOURCES OF COSTS
Training on food hygiene, occupational health and safety, and environmental protection		Workers and technicians of the Contractors	50 persons	Included in construction contracts
Training on the uEMP	Environmental impact assessment and risk controls	PMU & staffs of the Contractors	03 trainees, including: 01 PMU staff and 02 staffs from the Contractors	Included in contract of PMC
	Environmental monitoring			
	Environmental legislation			
	Implementation of the CEMP			
TOTAL				

6.5 DISCLOSURE & PUBLIC CONSULTATION:

36. Information disclosure to all stakeholders is required in implementation of the uEMP. Primary public consultation meetings were held during the Component's preparation phases, specifically during the preparation of the IEEs. Public consultations and continuous dialogues with the major stakeholders shall be conducted by Haiphong Water, particularly its PMU, during construction phase. Table 15 shows the plan for the Component's information and disclosure.



TABLE 15. INFORMATION & PUBLIC DISCLOSURE PROGRAM

CONTENT	PARTICIPANTS	TIME	LOCATION	RESPONSIBILITY	MONITORING	COSTS
Kick-off Meeting: the content for this meeting shall include: <ul style="list-style-type: none"> ▪ Address of the Contractors (name of primary corresponding people, phone number, email, place for contract); ▪ Address of Haiphong Water/PMU (name of primary corresponding people, phone number, email, headquarter/office address); ▪ Construction schedule; ▪ The uEMP and CEMP; ▪ Hotline establishment and information; ▪ Establishment of Supervision Community Board; ▪ Grievance redress mechanism. 	<ul style="list-style-type: none"> ▪ Haiphong Water/PMU; ▪ Local Authorities; ▪ Affected people; ▪ Contractors; ▪ PMC. 	02 weeks before starting construction	In one of two buildings near the construction site	Contractors	PMC and Haiphong Water/PMU	Included in Construction Contracts
Recurring Meetings: the content for this meeting shall include: <ul style="list-style-type: none"> ▪ Impacts of the Component implementation; ▪ Compliance of the Contractors with the CEMP and uEMP; ▪ Complaints (if any). 	<ul style="list-style-type: none"> ▪ Haiphong Water/PMU; ▪ Local Authorities; ▪ Affected people; ▪ PMC; 	Quarterly during construction	Offices of concerned wards	PMC	Haiphong Water/PMU	Included in PMC contracts
Unexpected meetings when serious problems occur: <ul style="list-style-type: none"> ▪ Identifying causes and formulating appropriate corrective measure. 	<ul style="list-style-type: none"> ▪ Haiphong Water/PMU; ▪ Local Authorities; ▪ Affected people; 	As soon as possible	Places of unexpected problems	Contractors or PMC	PMC and Haiphong Water/PMU	Expenses for these meetings shall be borne to those



CONTENT	PARTICIPANTS	TIME	LOCATION	RESPONSIBILITY	MONITORING	COSTS
	▪ PMC;					causing the problems

37. In addition to public disclosure and consultation meeting, other activities shall include:

- The Contractors shall update all concerned wards on progress of construction works through official correspondence on monthly basis;
- PMU shall inform local authorities on resolutions, decisions and corrective measures for all unanticipated problems and issues arising within their administration areas;
- Contact details of the Contractors and PMC for responses to environmental and safety issues shall be posted in public areas, such as offices of Hung Dao Ward, construction sites and so on.

7 EMERGENCY RESPONSE PROCEDURES:

7.1 EMERGENCY RESPONSE ROLES & RESPONSIBILITIES:

38. Key players in emergency response shall include: (i) Subproject Emergency Response Teams (SERTs) of the Contractors during construction and of the Operating Unit/Enterprises (OEs) during operation, as initial responders; and (ii) the Districts' and City's fire and police departments, emergency medical services, at least 02 nearest hospitals, Department of Health (DOH) and Department of Natural Resources and Environment (DONRE), collectively referred to as the External Emergency Response Team (EERT), as ultimate responders. The Contractors and OEs provide and sustain required technical, human and financial resources for quick response during construction and operation respectively.

TABLE 16. ROLES & RESPONSIBILITIES IN EMERGENCY RESPONSE

ENTITY	RESPONSIBILITIES
Subproject Emergency Response Team (SERT)	<ul style="list-style-type: none"> – Communicate and alert the EERT; – Prepare emergency sites to facilitate response actions of the EERT, such as vacating, clearing, restricting sites; – Lend support or provide assistance during EERT's response operations in any case of necessary or case requested by the EERT.
External Emergency Response Team (EERT)	<ul style="list-style-type: none"> – Solves arisen emergency situations.
Contractors and Operating Units/Enterprises	<ul style="list-style-type: none"> – Provide and sustain personnel, equipments, tools and funds needed to ensure the Component's quick response to emergency situations; – Maintain good communication lines with the EERT to ensure prompt helping response and adequate protection, by keeping them informed of the Component's progress.

39. SERT shall be led by an Emergency Response Coordinator (ERC). He/she shall be assisted by one Deputy ERC, who shall be authorized to act in behalf of the ERC, when necessary. Clinic staffs and security crew shall be the core members of SERT. The following personnel shall also be assigned supporting roles during initial response, and therefore, shall undergo orientation and training in proper initial response procedures: (i) foremen of all sub-construction groups and heads of OE units; (ii) heads of O&M (structural, mechanical and electrical); (iii) supervising engineers; (iv) heads and assistant heads of laboratory units during operation. Volunteers from construction sub-groups and OE units will be encouraged and trained accordingly. The Contractors and OEs shall ensure that ERT members and volunteers are physically, technically and psychologically fit for doing their emergency response roles and responsibilities.
40. Prior to mobilization of civil works, the Contractors, through its Construction Manager, ERC and/or Deputy ERC, in coordination with PMU and District People's Committee (DPC), shall meet with ultimate response institutions to discuss overall construction process, including, but not limited to: (i) the Component's sites; (ii) construction time frame and phasing; (iii) any special construction technique and equipments that will be used; (iv) any hazardous materials that will be brought to and stored in construction premises, along with details on their

- applications and handling or management system; and (v) the Contractors' Emergency Management Plan as contained in the ADB-cleared CEMP. Prior to operation, the OEs, in coordination with PMU and DPC, shall meet with the same institutions to present overall system components and operation process, including: (i) hazardous materials that will be brought to and stored in the premises of the WTP and BPS, along with details on their applications and handling or management system; and (ii) the Emergency Management Plan as embodied in the approved O&M Manual. The objective of these meetings and discussions are to provide the ultimate response institutions the context for: (i) their comments on adequacy of the respective Emergency Management Plans; (ii) their own assessment of what types, likely magnitude and likely incidence rate of potential hazards are anticipated; and (iii) arrangements for coordination and collaboration.
41. To ensure effective emergency response, prior to mobilization of civil works and prior to operation, the Contractors and OEs, respectively, shall: (i) set up their SERTs; (ii) set up all support equipments and facilities in working conditions; (iii) make arrangements with the EERTs; (iv) conduct proper training for SERT members, encouraging and training volunteers; (v) carry out orientation to all construction workers and OE staffs on emergency response procedures and facilities, particularly evacuation procedures, evacuation routes and directional signs, color and/or number coding of evacuation routes and exit gates, evacuation assembly points, and self-first response, etc.; and (vi) conduct drills for different possible situations.
42. To sustain effective emergency response throughout the Component's implementation: (i) adequate budget shall be provided to sustain the capabilities and efficiency of the emergency response mechanism; (ii) emergency response equipments, tools and facilities shall be inspected on weekly basis, and supplies (for example, first aid kits) shall be replenished regularly; and (iii) drills and reminders shall be done regularly, at least every 02 months.
- 7.2 COMMUNICATING & ALERTING:**
43. Means of reporting and alerting an emergency situation may be any combination of the followings: (i) audible alarms (siren or bell); (ii) visual alarms (blinking/rotating red lights); (iii) telephones (landlines); (iv) mobile phones; (v) two-way radios; and (vi) public address system or loud speakers. Communicating and alerting would be facilitated if the emergency management system has established and included alarm coding, number coding of evacuation routes, color coding of evacuation route directional signs, number coding of exit gates, etc.
44. Some rules relative to communicating and alerting shall be:
- i. Whoever detects an emergency situation first shall immediately:
 - call for attention of other people in the emergency site;
 - sound the nearest alarms;
 - report and communicate the emergency situation to SERT.
 - ii. Only ERC or, in a case that ERC is not available, Deputy ERC is authorized to communicate with EERT. Exceptional cases to this rule may be necessary, and should be defined in the Emergency Management Plans;
 - iii. When communicating and/or alerting an emergency to EERT, it is important to provide them with at least: (i) type of the emergency situation; (ii) correct location of the emergency; (iii) estimated magnitude of the situation; (iv) estimated people who got harmed; (v) time

when it happened; (vi) in case of a spill, which hazardous substance spilled; and (vii) in case of fire and explosion, what caused it. Such details would allow EERT to prepare for appropriate response actions.

45. For an effective reporting and alerting of an emergency situation:

- i. Names and contact details of relevant persons and institutions should be readily available in, or near to, all forms of communication equipments, and strategically posted (at legible size) in all Component sites and vehicles:
 - Most relevant construction or operation staffs, namely ERC, Deputy ERC, clinic staffs, PMC, OE's Administration Officer;
 - EERT institutions and organizations, namely the City's Fire Fighting Department, Police Department, Emergency Medical Services, at least 02 hospitals (with which the Contractors and OEs have made pre-arrangements for immediate emergency attendance), DOH and DONRE;
 - WPCs which affected by the Component;
 - PMU staffs, including its Environmental Engineers and Grievance Point Persons.
- ii. Phones and two-way radio communication are maintained at all times. BPS site should be installed with an effective alarm system. All Component sites should have good access to any combination of landline phones and mobiles, provided with sufficient number of batteries operated public address system;
- iii. All construction and/or operation vehicles should also be equipped with appropriate communication facilities.

7.3 EMERGENCY RESPONSE PROCEDURES:

46. The subsequent paragraphs suggest general procedures that shall be finalized and detailed under emergency response in Emergency Management Plans of the CEMP and O&M Manuals.

EVACUATION:

47. The aim of evacuation procedures should be to "safely move all workers, staffs, sub-contractors, site visitors, other public concerned out from the emergency sites and its influence areas immediately to safe grounds". The followings are recommended to facilitate safe evacuation: (i) have foremen of every construction sub-group, and heads of every OE unit as SERT members, trained to lead evacuation accordingly; (ii) have evacuation routes number- and color-coded, i.e., clearly marked with colored number signage and led to numbered exit gates and number re-assembly points outside the Component sites; (iii) at least 01 member of each construction sub-group and/or each OE unit, who is physically and psychologically qualified for emergency response, is trained on first aid, including basic handling of injured persons.

TABLE 17. EVACUATION PROCEDURE

PROCEDURES	REMARKS
Move out as quickly as possible, as a group, but avoid panic.	All workers, staffs, sub-contractors, site visitors move out, guided by SERT.
Evacuate through directed evacuation routes.	Safe evacuation shall be identified quickly by ERC or Deputy ERC, and then immediately

PROCEDURES	REMARKS
	communicated to SERT members.
Keep moving until everyone are safely away from the emergency sites and its influence areas.	Restricted areas must be established outside the emergency sites. All people have to stay beyond the restricted areas.
Once outside, conduct head counting.	Foremen or OE unit heads carry out head counting of their respective sub-group or unit, then reporting to ERC or Deputy ERC of SERT.
Report missing persons to EERT immediately.	ERC or Deputy ERC must communicate with EERT.
Assist injured people in evacuation and hand them over to clinic staffs or EERT medical groups.	SERT ensures proper handling of injured persons.
If injured people require special cares, do NOT move them, unless necessary or being instructed or directed by EERT.	ERC or Deputy ERC communicates with EERT to get instructions or directions in handling the injured.

MEDICAL EMERGENCY:

48. A medical emergency is a situation when a person is seriously ill or injured and his/her situation poses an immediate risk to his/her life or long-term health. A medical emergency situation will necessitate assistance from someone suitably qualified to provide immediate relief to the victim. It is recommended that at least 01 member of each construction sub-group or each OE unit, who is physically and psychologically qualified for emergency response, is trained on first aid, including basic handling of injured persons.

TABLE 18. RESPONSE PROCEDURE DURING MEDICAL EMERGENCY

PROCEDURES	REMARKS
Administer first aid regardless of severity immediately	Fundamentals when giving first aid: - Safety first of both the rescuers and victims. - Do not move an injured person unless the victim is exposed to more danger when being left where he/she is, for example, during fire, chemical spill; it would be impossible for EERT to aid victims in their location, e.g., under a collapsed structure; - Be instructed or directed by EERT. - first aid should be conducted only by persons who have been properly trained in giving first aid.
Call for EERT emergency medical services or nearest hospitals	ERC, Deputy ERC or authorized on-site emergency communicator
Facilitate leading EERT to the emergency sites	ERC or Deputy ERC shall instruct: A SERT member in the sites shall meet EERT in access roads or a strategic location, and leading them to the sites. He/she should hold an orange safety flag to get their attention. Other SERT members shall clear access roads for smooth passage of EERT.
If applicable, vacate the sites and influence areas immediately, restrict the sites, and possibly suspend works until further	Follow evacuation procedures.



PROCEDURES	REMARKS
notices	

FIRE:

49. The first priority of fire response should be to move out all workers, staffs, sub- contractors, site visitors and the public concerned out and to safe grounds.

TABLE 19. RESPONSE PROCEDURE IN CASE OF FIRE

PROCEDURES	REMARKS
Alert a fire situation	Whoever detects the fire shall immediately: - call for attention of other people in the sites; - sound the nearest alarm; - report or communicate the emergency situation to ERC or Deputy ERC.
Stop all activities or operations and proceed evacuating	All (non-SERT) workers, staffs, sub-contractors, site visitors and concerned public shall move out to safe grounds, following evacuation procedures.
Activate SERT to contain fire or control fire from spreading	Guided by the training they had, SERT members assigned to mitigate the fire shall assess their own safety situation first, before attempting to control fire spread.
Call the nearest fire and police stations, and, if applicable, emergency medical services	When alerting EERT, ERC will give the location, cause of the fire, estimated fire alarm rating, and any injuries.
Facilitate leading EERT to the emergency sites	ERC or Deputy ERC shall instruct: - an SERT member to meet EERT in access roads or a strategic location. He/she shall hold an orange safety flag to get their attention and lead them to the sites; - some SERT members shall stop traffic in and clear the access roads to facilitate passage of EERT.
SERT shall vacate the sites as soon as their safety is assessed as in danger	Follow evacuation procedures.

EXPLOSION:

50. Explosion may be caused by unsuitable mix of hazardous substances. It may result in physical injuries and fire. Explosion itself shall be an alarm. The first priority is to safely move out all workers, staffs, sub-contractors, site visitors and the public concerned.

TABLE 20. RESPONSE PROCEDURE IN CASE OF EXPLOSION

PROCEDURES	REMARKS
Take shelter and be prepared for possible further explosions or fire	From where he/she is, ERC or Deputy ERC shall quickly determine the followings to give proper directions: - where the explosion occurs; - what has caused it; - if a fire or further explosions are possible expected.
Evacuate as soon as possible	All workers, staffs, sub-contractors, site visitors and concerned public shall move out to safe grounds, following evacuation



PROCEDURES	REMARKS
	procedures.
Call the nearest fire and police stations and, if applicable, emergency medical services	When alerting EERT, ERC will give the location, cause of explosion, announcement in a case of fire, estimated fire alarm rating and any injuries.
If fire has broken out, do NOT attempt any fire control activity	Possibility of further explosion shall put SERT members' life in danger.
Facilitate leading EERT to the emergency sites	ERC or Deputy ERC shall instruct: - an SERT member to meet EERT in access roads or a strategic location. He/she shall hold an orange safety flag to get their attention and lead them to the sites; - some SERT members shall stop traffic in and clear the access roads to facilitate passage of EERT.

CONTAMINATION OF DRINKING WATER:

51. Threats or incidents of drinking water contamination should be evaluated immediately. If threat is possible, conduct site characterization and water sampling. Once the threat is verified, an emergency situation will be declared, and the following emergency response procedures will be activated.

- Call DOH, DONRE. If there are signs of terrorism or sabotage, call Department of Police. If persons have been affected by the contaminated water, call emergency medical services;
- Assist persons affected by the contaminated water;
- Together with EERT, conduct investigation and surveys (review gathered information, estimate extent of the spread, determine if the spread can be contained). Plan and implement containment strategy;
- Consult DOH on appropriate public notification to issue (to be able to issue appropriate notification, the contaminant should be known);
- Determine and provide alternative sources of water to supply the serviced areas;
- Develop and implement repair/restoration/remediation works and recovery.

CHEMICAL/HAZARDOUS SUBSTANCE SPILLAGE:

52. All spills shall be treated as hazardous. Regardless of severity, all spills shall be reported to ERC or Deputy ERC immediately. ERC or Deputy ERC shall quickly determine the substance that spilled and severity of the spill. Containing the spill shall only be attempted when it is possible to do so without danger. SERT members assigned to contain spill shall first do the following: (i) assess their own safety situation; (ii) read Material Safety Data Sheet (MSDS) of the relevant substance for proper guidance; (iii) prepare adequate number of right spill kits; and (iv) properly put on right protective wear/gears. If spill is of such scale that cannot be contained, ERC/Deputy ERC shall declare an emergency, triggering emergency response.

53. It would be advisable for the Contractors and OEs to provide EERT, prior to mobilization of civil works and prior to operation, with copies of MSDSs of all hazardous substances used during construction and during operation, respectively. In the Component's sites, MSDSs and spill kits for all chemicals or hazardous substances should be available, and easily accessed to, at all times.



TABLE 21. RESPONSE PROCEDURE IN CASE OF CHEMICAL/HAZARDOUS SUBSTANCE SPILLAGE

PROCEDURES	REMARKS
Sound an emergency alarm	
Attend the injured/affected persons	Follow response procedures for medical emergencies.
Stop all activities or shut down operations and order an evacuation	All (non-SERT) workers, staffs, sub-contractors, site visitors and concerned public shall move out to safe grounds, following the evacuation procedures.
Call the call nearest fire (and possibly police) stations, emergency medical response, DOH and DONRE	When alerting EERT, ERC or Deputy ERC will give information on at least the location, the substance that spilled, estimated extent of the spill and its effects, any injuries, and what initial response actions have been done.
Facilitate leading EERT to the emergency sites	ERC or Deputy ERC shall instruct: <ul style="list-style-type: none"> - an SERT member to meet EERT in access roads or a strategic location. He/she shall hold an orange safety flag to get their attention and lead them to the sites; - some SERT members shall stop traffic in and clear the access roads to facilitate passage of EERT.
SERT shall vacate the sites as soon as their safety is assessed as in danger	Follow evacuation procedures.
SERT members who assisted in the attempt to contain the spill shall undergo physical examination as soon as possible	

POST-EMERGENCY FOLLOW-UP:

54. After every emergency event, ERC or Deputy ERC shall prepare a report that will not only document the incident but also present a post-evaluation of the response, assessing its overall adequacy and effectiveness, i.e., in terms of organizational set-up and capacity (human resources, skills, equipments, communication and alerting, initial response procedures, recovery). Lessons learned from each response experience shall be highlighted to correct mistakes, citing inadequacies and gaps in the procedures and systems, and/or enhancing strengths. Spill kits and first aid kits shall be replenished. Changes that will be introduced into the emergency response procedures or system and improvements in preparedness must be relayed to workers and staffs. Appropriate training and drills incorporating the changes shall be conducted.

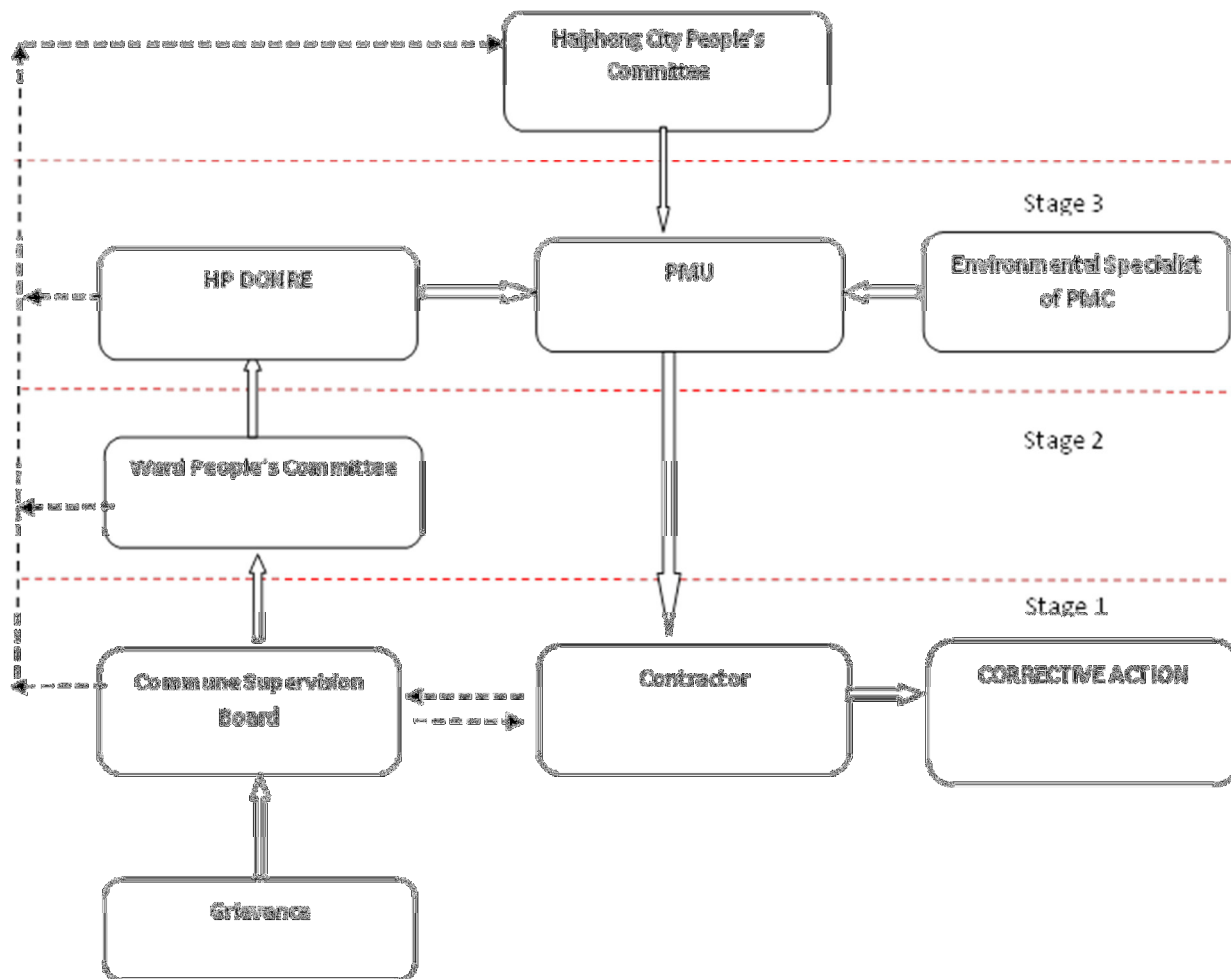


8 GRIEVANCE REDRESS MECHANISM:

55. Haiphong Water/PMU has developed a grievance redress and resolution mechanism to address grievances and complaints related to the uEMP implementation and the Project in general. This is shown in Figure 4. Every attempt should be made to establish a rapport between the affected communities and the Implementing Agency through frequent interactions and transparency, thereby maximizing the resolution of grievances at commune levels. A three-stage procedure for redress of grievances is proposed based on practices as follows:

- Stage 1: Complaints from affected people on any environmental damage caused by the Project implementation will be lodged verbally or in written form by the affected people (refer to APPENDIX 3: SAMPLE COMPLAINT FORM for the sample complaint form). Staffs from communes or Commune Supervision Boards will assess the level of environmental damage and report to PMU within 15 days of the receipt of the complaint;
 - Stage 2: If no resolution can be reached or if no response is received from the liaison officer within 15 days of registering the complaint, the affected people can take their complaint to their respected DPC who will conduct a site investigation to assess the damage and discuss with the Contractors during construction stage to determine and immediately take appropriate remedial measures within 30 days of the receipt of the complaint;
 - Stage 3: If the affected people are not satisfied with the decision of DPCs or in the absence of any response, the affected people can appeal to DONRE or Haiphong City People's Committee. DONRE or Haiphong PC will provide a decision on the appeal within 45 days but not exceeding 60 days, from the day that the appeal is received. In this stage, DONRE or Haiphong PC will enforce PMU to take a strong corrective action to resolve the problems either through enforcement of the Contractors' duties under the signed contract or providing necessary additional actions under its overall duties of the Project implementation.
56. A complaint or a case in the Court of Law may be filed separately or independently from the Project level Grievance redress mechanism filing process. Implementers of the mechanism should be guided by appropriate governmental laws and regulations related to the complaint, such as: Law on Complaints No. 02/2011/QH13; Article 64 of Decree No. 84/2007/ND-CP; Clause 2, Article 40 of Decree No. 69/2009; and regulations on grievance at Decree No. 75/2012/ND-CP dated 20/11/2012.

FIGURE 4. GRIEVANCE REDRESS MECHANISM SCHEME



8.1 ESTABLISHMENT OF A HOTLINE:

57. Supplementary to the procedures mentioned in the previous sections, Haiphong Water, namely PMU, PMC and the Contractors shall establish dedicated hotlines for local people to call directly whenever there is an incident or issue that needs to be addressed immediately. The hotline numbers will be made public and posted on all work sites and field offices of the Contractors, and public-gathering places of the nearby communities. PMU environment officers will be provided access to the hotlines for easier and faster responses. The primary objective of the hotlines is to assist complainants, stakeholders and affected persons to connect directly to Haiphong Water/PMU in solving all problems from the Project, especially during construction phase.

9 CONCLUSION:

58. The updated Environmental Management Plan (uEMP) are herein prepared to provide additional assessments on specialized impacts of Do Son component. These impacts are minor in significance, local in scale, temporal in nature, short-term in duration and can readily be mitigated through standard engineering and sound environmental management protocols. Additional assessments are provided for the following impacts:

- Impacts on water, air, noise quality;
- Disruption of local activities and public services;
- Impacts on generation of solid wastes;
- Obstruction to local traffic;
- Impacts by migrant workers;
- Health risk assessment and occupational safety.

59. Moreover, the uEMP includes mitigation measures to minimize, or if at all possible, eliminate potential adverse effects of the additional impacts identified. These mitigation measures can readily be implemented, and being appropriate for the existing conditions in the Component's areas. Furthermore, the uEMP proposes 02 programs for environmental monitoring during the Component implementation together with roles and responsibilities of the respective stakeholders. These are the following:

- Program of monitoring environment quality;
- Program of monitoring implementation of mitigation measures;
- Institutional arrangements and organization;
- Emergency response procedures;
- Grievance redress mechanism.

60. Based on the additional assessments and updated information from the uEMP, it comes to the conclusion of the Component is as follows:

- The Component construction is not located in sensitive environmental areas;
- The report identifies and provides full assessments on considerable impacts during all three basic stages: before, during and after the Component construction. It also provides mitigation measures in consultation with local authorities and affected people, including vulnerable groups;
- An environmental management and impact monitoring plan is set up to help stakeholders at different levels update information about the Component implementation;
- Mitigation measures stated in the uEMP as an indispensable provision in bidding for contractors. The Contractors shall split the Component volume and provide total costs for mitigation measures implementation. These costs are seen as safety costs. The Contractors shall be paid until all mitigation measures committed by contractors are effectively done;
- Environmental Monitoring Tasks (required in the uEMP) of the Project Management Consultant shall be established in the package for respective consultant.

APPENDICES

APPENDIX 1: Draft Outline of Environmental Monitoring Reports

I. INTRODUCTION:

<purposes of the report; order of submission of the reports, e.g., first, second, ..., nth reports; the period covered; the preparer; and structure of the reports>

II. BACKGROUND:

<brief background of the Component/Project; This part may remain the same for almost all of the details in every reporting>

2.1 Project description:

<the components of the Project; the Implementing Agency; the Project's costs or total investment; financing institution, modes and sharing; maps showing the locations of components and implementation packaging>

2.2 Component description:

<subproject components; locations; costs; implementation schedule; maps showing component sites>

III. PHYSICAL PROGRESS OF THE COMPONENT:

3.1 Previous progress:

3.2 Current progress:

<targets and actual performances; breakdown of site activities done in each component>

IV. COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS OF THE GOV:

V. COMPLIANCE WITH THE PROJECT LOAN AGREEMENT'S ENVIRONMENTAL REQUIREMENTS:

VI. COMPLIANCE WITH THE EMP:

6.1 Implementation of Mitigation Measures:

<Corrective and protective measures undertaken vis-à-vis EMP provisions; assessment of each measure's effectiveness; needed corrective actions; and violations or non-compliance. If corrective actions required coordination with relevant GoV agencies, citing coordination and certification from the GoV agencies concerned that corrective actions were instituted effectively. Attached certifications>

6.2 Conduct of Environmental Effects Monitoring:

<Required monitoring activities; status of implementation; results; violations or non-compliance>

6.3 Observance of the Grievance Redress Mechanism:

<Complaints received; status of their resolution; necessary action/s; violation or non-compliance>

VII. PERFORMANCE & EFFECTIVENESS ASSESSMENT:

7.1 Performance in EMP implementation:

7.1.1 Environmental impact mitigation:

<Overall assessment based on implementation status, i.e., if all, most, some or few of the mitigation measures in the EMP were carried out. Cite unexpected impacts and remedial actions taken. Cite number of violations or non-compliance, if any>

7.1.2 Environmental effects monitoring:

<Overall assessment based on status of effects monitoring, i.e., if all, most, some or few of the effects monitoring in the EMP were carried out. Cite number of violation or non-compliance>

7.2 Effectiveness of instituted mitigation measures:

<Assessing if instituted measures were fully or partially effective, or fully ineffective>

7.3 Overall environmental performance of the Component:

<Assessment of the performance indicators, i.e., if all, most, some, few or none of the environmental activities achieved their respective target outcomes fully, generally, or unsatisfactorily>

VIII. SUMMARY OF CORRECTIVE/ FOLLOW-UP ACTIONS TO BE TAKEN:

IX. LESSONS LEARNED:

X. CONCLUSION & RECOMMENDATIONS:



<To also cite violations or non-compliance since performance in EMP implementation is tied up with payment for progress billing and collection of performance bond by the Contractors; and since OEs are bound to meet environmental covenants in the Loan Agreement>



**APPENDIX 2: Guidelines for Contractor Environmental Management Plan (CEMP) of
Contractors – Reference Documents**

Haiphong Water Joint Stock Company
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CONTRACTOR ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Project: [add name of the Project]
Contract Package No. and name: [add no. and name of the Package]

Haiphong, [month]/[year]



CONFIRMATION & COMMITMENT

<The Contractor or the Joint Venture of Contractors ...> hereinafter confirms and commits that all the environmental protection, labour-health, safety and traffic control of the Project <Contract package No.:> in this CEMP shall be made with the highest priority on the obligation to perform the Contract <Joint venture, Sub-contractors>.

PROJECT MANAGEMENT UNIT	LEGAL REPRESENTATIVES OF THE CONTRACTOR



COMMITMENT ON UNDERSTANDING & COMPLYING WITH LAWS

The Contractor or the Joint venture of Contractors commits to understand and have sufficient capacity to ensure compliance with Vietnamese laws related to construction, which includes the followings:

- All laws on safety and health in the industry, including regulations and rules of Vietnamese Government and other competent organizations;
- All laws or environmental regulations which are issued by Vietnamese Government or local authorities, include, but not limited to, the following aspects:
 - Air pollution;
 - Water pollution;
 - Noise;
 - Vibration;
 - Solid waste management;
 - Waste water treatment;
 - Public health;
 - HIV/AIDS;
 - Culture/religion/special protected areas;
 - Local economy;
 - Employment of local labours;
 - Use of explosives;
 - Protection of public transports.

This CEMP also includes the following:

- Proposal and draft contracts (if required) for surveys and handling/disposal of unexploded ordnances (UXO): Although reports are unconfirmed but there is a very strong possibility that unexploded ordnances (UXO) still exists in the Component's areas. It is therefore prudent that the Contractors shall investigate through a conduct of consultations with local residents and the Contractor's staffs, and undertake detailed surveys to ensure that the issue is addressed. As such, the Contractor will review and evaluate requirements and, if necessary, propose an engagement of licensed entities to undertake requisite surveys and investigations as regulated by Ministry of Defense;
- Certification/Service contracts for handling and disposition of hazardous wastes;
- Site management plans and restoration of construction (concrete mixers, camp areas, temporary material storage areas.

DOCUMENT TO BE PREPARED:

The Contractor (or the Joint venture of Contractors) commits that:

- All copies of regulations regarding to environment, safety, health and traffic control, and other related documents are available at the construction sites;
- The regulations have been written in both English and Vietnamese, and will be posted prominently in public areas for perusal of all concerned.

MANAGEMENT OF SUB-CONTRACTORS:

The Contractors (or the Joint venture of Contractors) commits that:



- Provide a copy of the CEMP to all sub-contractors, and ensure all sub-contracts comply with the plans;
- Assign staffs who will be responsible and in charge of safety, being on-site at all times during implementation of the respective sub-contracts;
- Ensure that key staffs have appropriate professional qualifications and training for their respective specializations and responsibilities as stipulated in the CEMP and in accordance with laws and regulations of GoV.

CONFIRMATION ABOUT ENVIRONMENTAL & SAFETY OFFICERS:

The Contractor (or the Joint venture of Contractors) commits to assign an Environment Safety Officer (ESO) to comply with the following requirements:

- ESO will be appointed and assigned duties during performance of the Contract, and will be responsible for operational control of environment, safety, health and transportation aspects on sites;
- ESO has a good command of English language and appropriate expertises in monitoring and compliance requirements in the CEMP;
- ESO is not allowed to leave his/her position without approval in writing from the Contractor. Within 07 days of vacating the position, the Sub-contractors shall appoint a replacement of ESO upon approval of the Contractor;
- ESO will be provided with support staffs to assist him/her in execution of his/her tasks. At least one support staff will be appointed with approval of the Contractor;
- ESO and support staffs will provide necessary guidance to workers, and will be vested with authority to order stoppage of works and implement urgent actions to address concerns consistent with construction sites' safety protocols. They will also ensure that all works should not be in violation of the terms of policies and rules promulgated by GoV;
- ESO will prepare a daily construction diary to monitor all matters relating to the site environment, adherence to the CEMP. This will be updated regularly as the construction progresses, and be submitted upon a request from the Contractor, Haiphong Water/PMU and other related parties.

CONTRACTOR	LEGAL REPRESENTATIVES IF THE CONTRACTOR



PART I – INTRODUCTION OF CONTRACT PACKAGE

GENERAL INTRODUCTION:

- Name of the Project;
- Information of PMU;
- Brief description of the Project: overview and details about the Project's locations, project components;
- Background of the Project;
- Description of the Project's component;
- Phases, construction progress;
- Location, map of the Components.

DESCRIPTION OF CONTRACT PACKAGE:

- Name/Code of the Contract;
- Information of the Contractor;
- Location of the contract package;
- Scale;
- Detail description of the Component's construction (structure, quantity..);
- Construction progress.

CONSTRUCTION METHODS:

- Construction organization chart;
- Personnel organization chart and detailed description (roles and responsibility of key persons: commander-in-chief, safeguard staffs, etc.);
- Construction methods and equipment mobilization plans.

PART II – ENVIRONMENTAL BASELINE CONDITION

Based on the Environmental Impact Assessment (DTM), the Contractor will synthesize all points, issues and situations in or near the construction sites of the package.

ENVIRONMENTAL CONDITIONS:

- Air quality;
- Vibration;
- Surface water and ground water quality;
- Soil;
- Sediment;
- Natural protective areas, sensitive species (fauna/floral).

SOCIAL-ECONOMIC CONDITIONS:



- Land-use in or nearby the Project's locations;
- Industrial fields;
- Relocation and resettlement;
- Safety transport (roads, railways, waterways);
- Agriculture, forestry and fishery;
- Use of surface water and ground water;
- Cultural heritage, historical relics;
- Basic infrastructure and assets management.

(This information will be updated following observation of the Contractor, if any)

PART III – POTENTIAL IMPACTS DURING CONSTRUCTION STAGE

Based on the Environmental Impact Assessment (DTM) and detailed construction methods, the Contractor will summarize all potential impacts during construction and operation phases, for example:

- Impacts on arising dust, noise and vibration during construction;
- Impacts on waste water and environmental pollution in workers' camps and construction sites;
- Impact on social environment;
- Impacts on local flooding;
- Impacts on water receivers;
- Impact on safety traffic and infrastructure;
- Impacts on erosion and sedimentation;
- Impacts on protective and sensitive area;
- Impacts caused by dredging;
- Impacts caused by embankment;
- Impacts on quarries;
- Impacts on repelling groin.

(The Contractor should provide impacts to traffic and provide if transport vehicle construction materials, the construction sector and all other activities of the package may cause any impacts affecting the environment or socio-economic conditions)

Reference Table:

PHASE /COMPONENT	SOURCE OF IMPACT	POTENTIAL IMPACTS	ASSESSMENT OF IMPACTS	NOTES
CONSTRUCTION PHASE				
Delivery of materials	i) Transport of material	i) Traffic safety; ii) Noise;	Temporary/ Long-term	The transport of construction materials will



		iii) Vibration.		increase the risk of traffic accidents, especially in the location of
...

PART IV- ENVIRONMENTAL MITIGATION PLAN

Based on the approved EIA, EMP and uEMP and experiences in construction, the Contractor will propose mitigation measures (if necessary) to minimize or compensate for impacts of the Project in construction phase.

ENVIRONMENTAL MITIGATION MEASURES:

- Air quality;
- Vibration;
- Surface water and ground water quality;
- Soil;
- Sediment;
- Natural protective areas, sensitive species (fauna/floral).

SOCIAL ECONOMIC MITIGATION MEASURES:

- Land-use in or nearby the Project's locations;
- Industrial fields;
- Relocation and resettlement;
- Safety transport (roads, railways, waterways);
- Agriculture, forestry, fishery;
- Use of surface water and ground water;
- Cultural heritage, historical relics;
- Basic infrastructure and asset management.

Reference Table:

PHASE/ COMPONENT	DESCRIPTION OF CONSTRUCTION COMPONENT	GENERAL & SPECIFIC IMPACTS	MITIGATION MEASURE	FREQUENCY
CONSTRUCTION PHASE				
Delivery of materials	i) Transport of material	i) Traffic safety; ii) Noise; iii) Vibration.	i) Install speed limit signs; ii) Regular maintenance of vehicles; iii) Cover haul trucks	Daily; Once a week; Once a month; 03 months/time; 06 months/time;



			during transport of materials; iv) Inform local authorities and communities about construction schedule and duration.	
...

PART V – SOCIAL AND ENVIRONMENTAL MANAGEMENT PLAN

Based on the Environmental Impact Assessment (DTM), EMP, uEMP, and Construction Methodologies stated in the previous sections, the Contractor shall prepare the Contractor's Environmental Management Plan which would include, but not be limited, to the following:

- Roles and responsibilities of stakeholders (CPC, WPC, Haiphong Water/PMU, PMC, Contractors, etc.);
- Summary of monitoring reports of relevant parties;
- Implementation and coordination of CEMP. The Contractor shall organize personnel, time and task assignments for each position to implement effectively (references can be found on EIA, EMP and management/monitoring diagrams) requirements of the Contract;
- Communication: information of the representatives for the Contractor and assigned staffs should be clear (the Contractor's address, telephone numbers, email).

PART VI – CONCLUSION AND RECOMMENDATION

CONCLUSION:

The Contractor commits to fully implement environmental tenets and covenants of the Contract and establish mitigating measures as stipulated in relevant environmental documents and will ensure that during the execution of the works, care sound environmental management methods and practices shall be employed to minimize, or if at all possible, eliminate the Project's adverse impacts on receiving environment.

The Contractor also commits to complete the tasks and works embodied in his/her awarded Contract in a timely manner and will be responsible and penalized under the signed Contract with the Client if violations are made, taking into consideration environmental regulations of the Government of Vietnam and environmental safeguards requirements of ADB.

RECOMMENDATION:

Based on construction experiences, the Contractor makes recommendations so CEMP can be more effective in the phase and/or the Component's construction of the next items;

APPENDICES:



- Relevant tables, environmental and social regulations and standards, circulars and decrees, etc. (standards and regulation on waste water, hazardous wastes, noise and air quality, and so on);
- Map of layout for mitigation locations (including: locations of mitigated implementation, routes of transporting materials, residential areas, sensitive buildings likely as pagodas, schools, hospitals, etc.).



APPENDIX 3: Sample Complaint Form

Sample No. 32 (issued together with Decision No. 1131/2008/QD-TTTP dated 18/06/2008 of the General Inspector)

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

....., date month year

COMPLAINT

Address to:.....

- (1) Full name:
 - (2) Code of document:
 - (3) Address:
 - (4) Complaint:
 - (5) Content of complaint:
-
-
-

(documents, evidences attached, if any)

The Complainant:

(write full name and signature above name)

- (1) Names of agencies, organizations and individuals competent to settle complaints;
- (2) Full name of complainant.

If a representative for the agency, organization, title name agencies they represent.

Authorized if the complaint shall specify on the authorization of agencies, organizations and individuals.

- (1) This content is recorded by the complaint resolved agency.
- (2) Complaint for the first time (second time) with whose decision/action?
- (3) Content of the complaint:
 - Brief description about the situation;
 - Request (suggest) of the complainant (if any).