

Initial Environmental Examination (Final Review)

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April 2012

MFF 0054-VIE: Water Sector Investment Program – Tranche 2

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SC 100149 VIE: Supporting Viet Nam Water Sector Project PFR-2

Final Report

Submitted to

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CURRENCY EQUIVALENTS

(April 8, 2012)

<u>Unit</u>	–	Vietnamese Dong (VND)
VND 1.00	=	\$ 0.00005
USD \$1.00	=	20,895 VND

ABBREVIATIONS

ADB:	Asian Development Bank
BIWASE:	Binh Duong Water Supply, Sewerage & Environment One Member Limited Company
EARF:	Environmental Assessment and Review Framework
EPC:	Environmental Protection Commitment
BPS:	Booster Pump Station
DAKWACO:	Da Lak Water Supply and Construction Investment One Member Ltd Co.
DAWACO:	Da Nang Water Supply Company
DoNRE:	Department of Natural Resources & Environment
EIA:	Environmental Impact Assessment
EMP:	Environmental Management Plan
GERUCO:	Viet Nam Rubber Group Company
GoV:	Government of Viet Nam
HCMC:	Ho Chi Minh City
HPWSCO:	Hai Phong Water Supply One Member Company
IPPF:	Indigenous Peoples Planning Framework
IEE:	Initial Environmental Examination
LEP:	Law on Environment Protection
MFF:	Multi-tranche Financing Facility
MoNRE:	Ministry of Natural Resources & Environment
PC:	Public Consultation
PFR1:	First Periodic Financing Request
PFR2:	Second Periodic Financing Request
PPTA:	Project Preparation Technical Assistance
RF:	Resettlement Framework
ROW:	Right-of-Way
QTWASUCO:	Quang Tri Water Supply & Construction One Member Limited Company
SADCO:	Hai Phong Sewage & Drainage Company
SAWACO:	Sai Gon Water Supply Company
SEDP:	Socioeconomic Development Plan
HUEWACO:	Hue Water Supply Corporation
WTP:	Water Treatment Plant

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I. INTRODUCTION

A. Overview of Water Sector Support

1. The water sector in Viet Nam will receive assistance from the ADB over the next ten years through a Multi-tranche Financing Facility (MFF) that will fund improvements to urban water supply systems in different cities across the country. An MFF is one of six special funding modalities¹ of the ADB which provides for the long-term (evolving) needs of a borrower² such as Viet Nam. Key areas targeted by the MFF are: 1) infrastructure development for improved and expanded potable water supply; and 2) capacity development of the decentralized institutions responsible for providing efficient and financially sustainable water supply services.

2. The target areas directly support the objectives of the current GoV Socioeconomic Development Plan (SEDP) defined by: a) provision of essential water supply infrastructure to poor households; b) integration of infrastructure plans into master plans and land use plans; and c) enhancement of cost recovery for infrastructure investments by setting and collecting tariffs and fees. The status and needs for the water sector in Viet Nam are described in the Water Sector Review³. The rational and scope of support to be provided by the ADB is described under separate cover⁴.

3. Water supply improvement projects have been identified for cities in the provinces of Thua Thien Hue, Hai Phong, Binh Duong, Dak Lak, Quang Tri, and the city-provinces of Da Nang and HCMC. The MFF will be disbursed through Periodic Funding Requests (PFR) with PFR-1 already registered with the Saigon Water Supply Company (SAWACO) of HCMC. The PFR-2, and subject of this report, will support water supply improvements in the other six provinces defined above.

B. Environmental Assessment and Review Framework

4. An Environmental Assessment and Review Framework⁵ (EARF) was prepared to support ADB's Water Sector Support to Viet Nam. The EARF provides guidance for borrowers for the preparation of environmental safeguards⁶ for the urban water supply projects that are supported by the MFF⁷. Urban water supply projects normally require initial environmental evaluations (IEE) to determine potential environmental impacts, and to identify with an environmental management plan (EMP) the required impact mitigations and environmental monitoring requirements for the pre-construction, construction and operation phases of the project.

C. Terms and Scope of Due Diligence

5. To assist with processing the water supply subprojects identified for the MFF, a review of the environmental safeguards that have been prepared for the subprojects is being conducted. The review is focusing on the impact assessments and the EMPs for potential environmental

¹ ADB, 2009. Safeguard Policy Statement, Appendix 4.

² ADB, 2010. Multi-tranche Financial Facility, Operations Manual Section D14/BP/OP issued May 2010.

³ GoV, et al. 2009. Viet Nam Water Sector Review.

⁴ ADB, 2010. Supporting Viet Nam Water Sector, Project Concept Paper.

⁵ JDM & MWH, 2010. EARF prepared for ADB Viet Nam Water Sector Support, 26 pgs + 8 appendices

⁶ ADB, 2009. Safeguard Policy Statement, Appendix 1.

⁷ Annex 1 of footnote 1

impacts that have been identified for each subproject with an ADB IEE, or either a GoV EIA or EPC.

6. The purpose of the review is to ensure that potential environmental impacts of a water supply subproject are not overlooked, and that the follow-up (EMP) addresses all impacts. The intention of the review is not for an IEE or GoV safeguard document to be modified. Rather, any required additions or changes to an IEE, GoV safeguard document, or EMP arising from the review are meant to be addressed during the detailed design phase of a subproject when the draft EMP is updated to meet the detailed designs of the subproject.

7. The review of environmental safeguards is based on the ADB IEE reports and GoV EIA and EPC documents prepared for the subprojects listed below. With the exception of the five component IEEs for the Hai Phong subproject, each IEE was prepared independently from separate terms of reference (ToR). The ToRs for the all IEEs and GoV safeguards did not form part of the review documentation.

8. The environmental safeguards for the following urban water supply subprojects in six provinces are being reviewed:

Hai Phong

Five IEEs for the following five core components:

- Construction of Kim Son Water Supply System;
- Construction of Water Supply System in Northern Part of Cam River;
- Upgrading An Duong Treatment Plant from 100,000 – 200,000 m³/day;
- Hung Dao Water Supply Project;
- Rehabilitation of Do Son Water Supply System & Adjacent Areas.

Da Nang

IEE for the Da Nang Water Supply Subproject

Dak Lak

IEE for Buon Ma Thot City & Three Districts Water Supply subproject

Thua Thien Hue

IEE for the Thua Thien Hue Water Supply Subproject.

Quang Tri

GoV EIA for Water Supply Development in Dong Ha & Suburbs Subproject

Binh Duong

GoV EPC for the Southern Thu Dau Mot Water Supply Subproject

II. REHABILITATING AND UPGRADING OF HAI PHONG WATER SYSTEM – STAGE II

9. The five components of the Hai Phong subproject listed above form the second stage of the overall rehabilitation and upgrading of the water system of Hai Phong. The five IEEs and EMPs for the different components were prepared by the same consulting entity and thus follow a common format and structure. Common and specific comments for the five IEEs and draft EMPs are provided. Also, because the subproject components will likely form separate civil works packages, common comments are repeated in the context of the individual components. Note that the Do Son and Hung Dao components are closely linked and thus will likely form a single civil works package.

A. Five IEEs

10. Overall, the five IEEs and accompanying EMPs for the Hai Phong subproject components are well prepared. The detail, organization, and presentation of potential impacts of the different subprojects along with impact mitigations and environmental monitoring requirements of the EMP starting from the pre-construction phase through the construction and operational phase is thorough. Of particular note is the proposed management of the issue of sustainable treated water, the detail and organization of the emergency response plans, and institutional responsibilities prescribed by the EMPs.

1. GoV EIA regulatory framework, and environmental standards

11. Secondary but necessary changes which were beyond the control of the preparation of the IEEs that can be expressed in the final EMPs are the recent changes to the GoV EIA regulatory framework. In June, 2011 the promulgation of Decree 29/2011/ND-CP effectively replaced Decree 21/2008/ND-CP. The EIA screening criteria of Decree 21 is updated with new the screening criteria of Decree 29. Further, in August 2011 MoNRE approved Circular 26/2011/TT-BTNMT which replaced Circular 05/2008/TT-BTNMT.

12. In addition to the EIA framework the national (e.g., QCVN & TCVN) environmental standards, for example, surface and coastal water quality for Viet Nam should be checked to determine recent updates. Key international standards, e.g., World Bank Group EHS (2007) for occupation and public safety should be referenced as appropriate.

Recommendation: Update GoV EIA regulatory framework and national environmental standards, and relevant international environmental standards in EMP at detailed design stage.

2. Public Consultation and Disclosure

13. The initial consultations of the affected communities of the five subproject components have generated a shared information base of concerns and necessary actions between the affected public and component proponents. The various public/project proponent meetings provided the foundation for continued exchange to ensure public concerns of subproject components are addressed, which also supports the grievance redress mechanism defined in the IEEs.

Recommendation: At the detailed design phase the original registered concerns of the consulted public be brought forward to follow-up consultations to ensure all public concerns are updated and publicly acknowledged and incorporated in detailed designs & EMP.

3. ADB safeguard frameworks

14. The safeguard frameworks (i.e., resettlement, environment, indigenous peoples) of the ADB⁸ should be referenced in the IEEs to highlight the cohesiveness of these safeguard tools for the special funding modalities such as the MFF. The IEEs should reference the Environmental Assessment and Resettlement Frameworks (EARF & RF) that have been prepared for the subprojects. The safeguard frameworks are meant to provide a common reference point for subproject development over the life of the MFF.

Recommendation: At detailed design stage elaborate a sentence in EMPs that acknowledges existence of the relevant environmental and social safeguard frameworks to indicate the role of ADB safeguard frameworks in the implementation of the MFF.

B. Construction of Kim Son Water Supply System

- New WTP with capacity of 25,000 – 200,000 m³/day
- 21 km of new transmission mains (D300-D500)

1. Aquatic resources and uses of the Sai River

15. The IEE examines thoroughly water quality issues of the Sai river from which the new WTP will take raw water both from the perspective of sustainable treated water quality, and the potential effects of construction and operation of the water supply system on water quality. However, the aquatic resources (e.g., flora & fauna) and specific human uses of the river are omitted from the IEE. Thus, to complete the assessment of potential impacts of the component on the Sai river, and to complete the EMP the aquatic resources and human uses of the affected sections of the river need to be documented and assessed for potential impacts. The other ecosystem values of the river depend in part on water quality, and on other potential influences of the component such as altered flow regime.

Recommendation: During detailed design phase existing or original data/information on the aquatic resources and human uses of the affected reaches of the Sai river should be collected to allow completion of impact assessment, and to update the EMP where necessary.

2. Sub-plans of Construction Environmental Management Plan (CEMP)

16. A notable strength of the IEE and EMP is the comprehensive list of individual sub-management plans that are identified for the different types of potential impacts that contractor needs to develop to form the CEMP (e.g., dust control, traffic control, aggregates management, site restoration, excavation & soil removal, gas emissions, noise and vibration management, solid and hazardous waste management, occupational health and safety, emergency response, mitigation & monitoring of EMP, and grievance redress).

17. Given the extent & location of excavations that will occur within the component [i.e., 23,000 m³ of soil from all five components to be disposed] a specific plan for the identification, handling, testing, and disposal of contaminated soil needs to be included. This could be added to the “Contractor’s Removal Soil Management Plan” identified in item 6.3 of pre-construction phase of Mitigation Plan of EMP.

⁸ footnote 1

18. Additionally, a chance finds management sub-plan needs to be developed as part of the CEMP. The potential for chance finds is mentioned in IEE/EMP (e.g., item 17.1 of construction phase of mitigation plan of EMP), however, the potential value of chance finds warrants an *a priori* set approved of steps that respond to the immediate find, protection and removal of such cultural values when encountered.

19. Hai Phong was a major military target during the Vietnamese-American war. There needs to be in place a comprehensive *a priori* plan for UXO identification and removal by the military at all sites of excavation. The note of possible UXO (item 13.7 of construction phase of mitigation plan of EMP) is insufficient.

Recommendation: The following specific sub-management plans should form part of the CEMP:

- 1) UXO locating & removal;
- 2) contaminated soils identification, removal & disposal;
- 3) chance finds recovery & removal; and
- 4) include with the excavation sub-plan placement of temporary berms & plastic sheeting between excavations and adjacent land, surface waters, and property to prevent erosion, sedimentation, or contamination from excavation work.

3. Isolation perimeter for WTP

20. The site restoration sub-plan identified for the CEMP that will be implemented at the end of the construction phase should be extended to include the construction of a dense treed and fenced perimeter around the entire WTP property including reservoirs and sludge drying ponds. The perimeter will help contain noise & odour from the WTP, and keep the community (i.e., children) out of WTP property.

Recommendation: Include a treed and fenced perimeter in the design of the WTP.

4. Assimilation of increased wastewater production

21. The IEE introduces the important potential, induced impact of the additional industrial and domestic wastewater that will arise from the initial 25,000 m³/day and targeted 200,000 m³/day of water supply. The problems focus on the current capacity of domestic septage and industrial wastewater management, and whether the JICA activated sludge facility (36,000m³/day) being developed will apply and/or be able to assist with management of the increased wastewater.

22. However, the EMP does not specify the need to monitor this potential operational-phase impact. While outside technical scope of the water supply component, the EMP needs to explicitly identify the requirement to monitor the ability of An Duong district to manage and assimilate the increased wastewater that will be produced. The issue of additional wastewater of Kim Son component contributes to the potential cumulative impact of all 5 components of Stage II.

Recommendation: A monitoring program module for effective management of increased wastewater production should be added to operational phase of monitoring plan EMP.

C. Construction of Water Supply System in Northern Part of Cam River

- New WTP with capacity of 25,000 – 200,000 m³/day & 1 km access road
- New BPS
- 18 km of new transmission mains (D250-D600)

23. The issues of the IEE and EMP of the Kim Son component apply to the Northern Cam river component.

Recommendation: During detailed design phase data and information on the aquatic resources and all human uses of the affected reaches of the Gia river and artificial reservoir should be collected to allow completion of impact assessment, and to update the EMP where necessary. Ecological resources and uses of the wetland areas on which the BPS will be located should be included.

Recommendation: The following specific sub-management plans should form part of the CEMP:

- 1) UXO locating & removal;
- 2) contaminated soils identification, removal & disposal;
- 3) chance finds recovery & removal; and
- 4) include with the excavation sub-plan placement of temporary berms & plastic sheeting between excavations and adjacent land, surface waters, and property to prevent erosion, sedimentation, or contamination from excavation work.

Recommendation: A monitoring program module for effective management of increased wastewater production should be added to operational phase of monitoring plan EMP.

Recommendation: Include a treed and fenced perimeter in the design of the WTP.

D. Upgrading An Duong Treatment Plant

- Upgrade WTP from 100,000 to 200,000 m³/day
- 5 km of new transmission mains (D400 & D700)

24. The residual issues of the IEE and EMP of the An Duong component are similar but less extensive than those of the Kim Son and Northern Cam river components because the disturbance to the social and natural environments created by the new physical intervention is restricted to the new transmission lines. The upgrades to the WTP will occur on the lands (footprint) of the existing WTP.

Recommendation: Though reportedly highly polluted, for completion the data and information on the aquatic resources and all human uses of the affected reaches of the Re river should be documented to complete the impact assessment with EMP updated where necessary.

Recommendation: The following specific sub-management plans should form part of the CEMP:

- 1) UXO locating & removal along new transmission corridors;
- 2) contaminated soils identification, removal & disposal;
- 3) chance finds recovery & removal; and
- 4) include with the excavation sub-plan placement of temporary berms & plastic sheeting between excavations and adjacent land, watercourses, and property to prevent erosion, sedimentation, or contamination from excavation work.

Recommendation: A monitoring program module for effective management of increased wastewater production should be added to operational phase of monitoring plan EMP.

Recommendation: Rehabilitate or expand existing perimeter of WTP where necessary to include trees and fence.

E. Hung Dao Water Supply Project

- New WTP with capacity of 25,000m³/day
- New transmission mains (D300-D600)

25. The outstanding issues of the IEE and EMP of the Hung Dao component are the similar as the Kim Son component.

Recommendation: During detailed design phase data and information on the aquatic resources and all human uses of the affected reaches of the Da Do river should be collected to allow completion of impact assessment, and to update the EMP where necessary.

Recommendation: The following specific sub-management plans should form part of the CEMP:

- 1) UXO locating & removal;
- 2) contaminated soils identification, removal & disposal;
- 3) chance finds recovery & removal; and
- 4) include with the excavation sub-plan placement of temporary berms & plastic sheeting between excavations and adjacent land, watercourses, and property to prevent erosion, sedimentation, or contamination from excavation work.

Recommendation: A monitoring program module for effective management of increased wastewater production should be added to operational phase of monitoring plan EMP.

Recommendation: Include a treed and fenced perimeter in the design of the WTP.

F. Rehabilitation of Do Son Water Supply System & Adjacent Areas

- Conversion of WTP to BPS (25,552 m³/day
- 11.5 km of new transmission mains (D300-D400)
- New service connections (approx. 20,000)

26. The residual issues of the IEE and EMP of the Do Son component are similar but less extensive than those of the An Duong component because the new physical intervention & disturbance to the social and natural environments are restricted to new transmission lines. No water course will be affected after source water withdrawal from the He river ends.

Recommendation: The following specific sub-management plans should form part of the CEMP:

- 1) UXO locating & removal along new transmission corridors;
- 2) contaminated soils identification, removal & disposal; and
- 3) chance finds recovery & removal; and
- 4) include with the excavation sub-plan placement of temporary berms & plastic sheeting between excavations and adjacent land, wetlands, and property to prevent erosion, sedimentation, or contamination from excavation work

Recommendation: A monitoring program module for effective management of increased wastewater production should be added to operational phase of monitoring plan EMP.

Recommendation: Ensure existing treed and fenced perimeter is restored after conversion of WTP to BPS.

G. Cumulative Wastewater Production

27. The issue of effectively managing the increase in domestic and industrial wastewater indirectly produced by the component subprojects would be addressed most effectively across all components of Stage II of the Hai Phong Water Supply System. The Hai Phong Sewerage and Drainage Company (SADCO) is responsible for septic tank pumping, and cleaning & servicing the existing combined stormwater and sewer lines.

Recommendation: The Hai Phong Water Supply One Member Company Ltd., SADCO, and the JICA Environmental Improvement Project form a task force, and with direct assistance from the future detailed design consultant(s) for the four water supply components develop a comprehensive monitoring program for wastewater production issues for Stage II as a whole.

III. DA NANG WATER SUPPLY PROJECT

A. Overview

28. The water supply project consists of the following components:

- 16 km raw water main (D1400) from planned Bac river hydroelectric dam and reservoir
- New WTP (120,000 – 240,000 m³/day)
- Expansion of existing treated water distribution

29. The future dam and reservoir on the Bac river (a tributary of Cu De river) has already been approved by the Da Nang Peoples Committee (DNPC) for hydroelectric power development, and for construction by GERUCO. The dam and reservoir were excluded from the IEE. A GoV EIA was conducted independently and approved for the dam and reservoir.

B. IEE

1. Ba Na-Nui Nature Reserve

30. As described and figured clearly in the IEE, almost 75% of the 16 km raw water main is located inside the Ba Na-Nui Nature Reserve northwest of Da Nang. The implementation of a major physical development intervention such as the raw water main in *or near* an ecological protected area – referred as *critical habitat* - normally requires that an ADB category A⁹ EIA be conducted for the project.

31. However, development projects can occur in critical habitat areas if it is clear that no measureable adverse impacts to habitat, biodiversity, and ecosystem function – as detailed fully by the SPS (2009). Further, when such sensitive habitat is directly affected the borrower must: a) retain experts [knowledgeable of the affected critical habitat] to assist in the assessment of potential impacts on the critical habitat; and b) implement project in manner consistent with management plan of protected area, consult protected area sponsors, managers, and local community, and consider implementing additional activities to enhance or promote conservation aims of the protected area¹⁰ (SPS 2009).

⁹ ADB Environmental Categorization

¹⁰ para 28-30 of footnote 6

32. The Da Nang project was assigned Category B level of assessment which suggests there are no potential permanent or irreversible impacts of the raw water main on sensitive ecological attributes of the affected areas of the Ba Na-Nui nature reserve. However, the IEE understates that impact assessment, including consultation with experts and management of the nature reserve. In particular:

1. no published or original survey results of the specific, protected aquatic and terrestrial resources (e.g., fauna & flora) that could be affected along the site of the raw water main were provided in IEE
2. the management board of the Ba Na-Nui reserve does not appear to have been consulted, or to have been part of the assessment team; and
3. the management plan for the reserve (e.g., catchment and conservation protection) was not examined and reported on in detail to assess compliance of the raw water main component of subproject.

Recommendation:

33. A supplementary assessment of the potential impacts of the placement of the raw water main in Ba Na-Nui nature reserve be undertaken as part of the finalization of EMP during the detailed design phase. The assessment would start with the compilation of existing and/or new data & information on the aquatic & terrestrial resources (e.g., critical habitat, rare or endangered species) of the corridor through the reserve that will be affected by the construction and operation of the raw water main. Potential impacts of the construction and operation activities on the ecological resources would then be conducted. While outside the scope of the IEE the effects of the construction and operation of raw water main will need to consider the effects of the reservoir and dam on the aquatic resources of the Bac river (e.g., resident fish communities and movement).

34. Assessment requirements for the new WTP, and expanded transmission network are addressed by the additional specific requirements identified for the EMP below.

C. EMP

35. The comprehensive discussion of impact mitigation measures, monitoring requirements, and institutional responsibilities provided in the IEE were not sufficiently developed in the EMP. The mitigation plan and monitoring plan (i.e., Table 12 of IEE) does not provide the information needed for DAWACO and the international subproject implementation consultant to easily and adequately mitigate and monitor the potential expected and unexpected environmental impacts of the subproject. The EMP requires more prescriptive detail especially in view of the need to protect the Ba Na-Nui nature reserve. And, as reported in the IEE, the major civil works that will be needed to safely and sustainably place the raw water main along the steeply sloped sections of the Bac river valley corridor, and across the Nam river will cause major construction-related disturbances which need to be better understood, and managed well.

36. Recommended sub-management plans:

At the detailed design stage the EMP should be expanded with the identification of detailed sub-environmental management plans for the different impact types on the environment and community during the *pre-construction*, *construction* of *operation* phases of all three subproject components (raw water main, new WTP, and distribution network expansion) The sub-plans need to be formulated during the pre-construction phase, and could ultimately form a separate

construction environmental management plan (CEMP). The following sub-environmental management plans should be considered for the raw water main, WTP, and expanded distribution network:

1. Securing GoV approvals (e.g., environmental safeguards, construction permits);
2. UXO survey, removal and disposal;
3. Forest clearing & tree removal;
4. River crossings and diversions including coffer dam placement (for Nam, Han, & Cam Le rivers);
5. Excavation & soil/rock removal including blasting (especially for riverbed & steep slope works);
6. Contaminated soil testing, removal, and disposal;
7. Erosion, landslide, and sedimentation (especially for raw water main);
8. Rare/endangered species or critical habitat protection (e.g., affected Ba Na-Nui reserve area);
9. Community living, and cultural property protection;
10. Chance find identification and recovery;
11. Dust control;
12. Noise & vibration control;
13. Emissions (NO_x, SO_x, CO, CO₂) from heavy equipment;
14. Public & worker safety and health (especially for raw water main works);
15. Emergency response (especially for raw water main);
16. Community and construction traffic control;
17. Construction & operation-phase domestic and solid waste;
18. Construction & operation-phase contaminant waste;
19. Hazardous chemicals management (e.g., chlorine);
20. WTP sludge management & landfill disposal;
21. Reservoir construction and management;
22. Raw water quantity & quality sustainability; and
23. Expansion of wastewater treatment in Da Nang.

37. Key sub-management plans for the operational phase of the subproject are for reservoir water quality and quantity (#21 & #22 above). As introduced in IEE, raw water quality and supply will be dependent on the inundated basin, and the operation of completed reservoir. Despite the important contention in IEE that raw water quality should be good given little human activity (e.g., agriculture) in the basin, a flooded forested basin will significantly influence the water quality (e.g., dissolved organics load) of the newly created reservoir. And, as reported, the timing of reservoir and dam completion needs to coincide with the commissioning of the raw water main and WTP. Thus, a reservoir & dam construction and management plan should be jointly developed by DAWACO and GERUCO to serve both uses of the reservoir.

38. The sub-management plans should respond directly to the detailed designs of the project. They should be identified requirements in tender documents, and then subsequently reviewed in contractor bids by DAWACO with assistance from international design consultant.

39. Recommendation for Mitigation and Monitoring Plans: At detail design phase the mitigation and monitoring plans of the EMP need to be expanded with more prescriptive detail. The plans must also respond to the additional required impact assessment of the raw water main, and express the detailed mitigation measures and monitoring requirements of the sub-environmental management plans. The detailed mitigation and monitoring plans should be presented in separate tables with the following suggested table row and column headings:

1. Mitigation Plan

Major rows:

1. Pre-construction-design phase
2. Construction phase
3. Commissioning-operation phase

Minor rows:

- a) Impact type (as per a sub-environmental management plan)
- b) Detailed impact mitigation measures of impact type

Columns:

1. Project activity
2. Potential impact
3. Description of mitigation
4. Location
5. Timing
6. Reporting frequency
7. Estimated cost
8. Responsibility (implementation & supervision)

2. Monitoring Plan

1. Impact & environmental indicator(s)
2. Location
3. Timing
4. Methods/protocol and environmental standards
5. Reporting frequency
6. Estimated cost
7. Responsibility (implementation, supervision)

40. Important operational-phase environmental monitoring is as follows: 1) raw water quality and quantity; 2) treatment plant sludge quality; and 3) the capacity of current wastewater management in Da Nang to assume the increase in wastewater production. Raw water quality monitoring is needed to document the effects of the inundated forest basin including natural and man-made contaminants such as cadmium and dioxins from herbicides such as lingering agent orange. And as indicated by IEE, high mercury levels linked to mining activity have been found in the southern rivers of Da Nang that drain the basins of Quang Nam. The quality of treatment plant sludge should be monitored periodically because it magnifies the concentrations residual of treatment chemicals such as alum, and concentrations residual constituents of the raw water. Raw water quantity should be monitored to understand the effect of future reservoir levels and discharge management on domestic water supply. The Da Nang water supply project ultimately should not be dependent on Da Nang's plan to increase wastewater collection and treatment capacity.

D. Public Consultation and Disclosure

41. The initial consultations of the affected communities of the five Da Nang subproject (Annex 5 of IEE) have provided an information base of concerns and necessary actions between the affected public and DAWACO. The initial meetings provided the foundation for continued exchange to ensure public concerns of the subproject are addressed, which also supports the grievance redress mechanism defined in the IEE.

Recommendation: At the detailed design phase the original registered concerns of the consulted public be reviewed at follow-up consultations to ensure all public concerns are updated and publicly acknowledged and incorporated in detailed designs & EMP.

E. Environmental Safeguard Regulatory Frameworks, & Standards

42. The GoV regulatory framework for environmental safeguards presented in IEE needs to be updated. The reported Decree 175 supported the first Law on Environmental (LEP, 1994) which has since long been replaced by a series of Decrees that support the current LEP (2005).

43. The ADB safeguard framework needs to be elaborated to, for example, provide the basis for the rationale for building part of the subproject in a national nature reserve. Further, the IEE should reference the relevant ADB safeguard frameworks (e.g., RF & EARF) that have been developed to support of the MFF funding mechanism for the subproject. Changes to the regulatory frameworks can be included with the update of the EMP at detailed design stage. Similarly, the guiding safeguard frameworks, and updates to the relevant national (i.e., QCVN & TCVN) and international environmental standards (e.g., World Bank Group 2007) can be included with final EMP.

IV. BUON MA THOT CITY & 3 ADJACENT DISTRICTS WATER SUPPLY – DAK LAK

A. Overview

44. The subproject consists of the following components:

A) Buon Ma Thuot Water Supply System

- new intake for new raw water source
- raw water pumping station & 6 km main
- new WTP (35,000 m³/day)
- new BPS & reservoir (5000 m³);
- expanded and improved distribution network

B) New water supply systems in:

- Ea Kar District (2,500 – 5,000 m³/day)
- Krong Nang District (1,600 – 3,200 m³/day)
- Buon Duong District (1,000 – 2,000 m³/day)

The IEE represents an update of the GoV EPC that was prepared for subproject.

B. IEE

45. The IEE presents a somewhat repetitive and not optimally organized description of the Project, affected Social and Natural Environments, and Institutional Setting from which the brief environmental assessment was developed. This likely is a result of the IEE originating as a GoV EPC, followed by translation to English before being updated to the IEE.

46. The IEE reports on socioeconomic conditions and physical features of the project areas such as topography, geology, climate, water resources including water quality, population,

industry, tourism, agriculture, economic growth, business & marketing, municipal services, and cultural property & values.

47. With respect to ecological resources the IEE is notably brief. The rich assemblage of streams and lakes throughout the project areas are noted but no account of forested areas is provided. The IEE indicates that no rare or endangered species from the Viet Nam Red Book or critical habitat are in the project areas, and that almost all natural habitat has been converted to cultured lands. The DoNRE indicates the absence of wildlife or natural resources values in Krong Ana district, that the Yok Don National Park of Buon Don District will not be affected.

48. It is important to clarify that key ecological attributes and values (i.e., rare & endangered species, national parks) will not be affected, however, missing is a general account of resident terrestrial and aquatic fauna and flora of the affected areas, as well any as human uses of the ecological resources (e.g., hunting, fishing, resource extraction). Local agriculture is mentioned but not aquaculture.

Recommendation: When the EMP is updated at detailed design stage the available information on terrestrial and aquatic resources (e.g., fauna and flora) and other human uses of natural resources in or adjacent to the project areas should be added to EMP for needed context and completeness.

49. The IEE briefly identified potential environmental impacts associated with the following activities and disturbances of the pre-construction, construction, and operational phases of the new water supply systems: *land acquisition; site clearing; vegetation removal; structure demolition; dust, noise; exhaust fumes; domestic wastewater, solid waste; waste oil; earthworks; erosion; traffic; worker population & camps; chemical management; and sludge management & disposal*. Potential impacts at the four project areas were identified. The potential impact of an unsustainable raw and/or treated water supply was not identified.

Recommendation:

As part of the finalization of the EMP, the range of potential impacts cited in IEE should be reviewed to ensure they are complete and adequately described. The potential for an unsustainable raw and treatable water supply should be included.

C. EMP

50. The EMP provides insufficient information and direction for implementation by DAKWACO with assistance from an implementation consultant. The impact mitigation measures, and monitoring plans consist of lists of bullet points without sufficient application detail. The institutional responsibilities and capacity development needs for the implementation of EMP are also undeveloped. The EMP does not identify project component performance measures, or a grievance redress mechanism.

51. Recommended sub-management plans:

At the detailed design stage, following the review of impacts of the IEE, the EMP should be expanded with detailed sub-environmental management plans for the different identified impact types on the environment and community during the *pre-construction, construction of operation* phases of the four subproject components. The sub-plans must be developed during the pre-construction phase, and ultimately could form a separate construction environmental management plan (CEMP) that is required in contractor bids. The following sub-environmental management plans should be considered:

1. Securing GoV approvals (e.g., environmental safeguards, construction permits);
2. UXO survey, removal and disposal;
3. Excavation & soil/rock removal;
4. Contaminated soil testing, removal, and disposal;
5. Forest clearing & tree removal;
6. Erosion, landslide, and sedimentation;
7. Rare/endangered species or critical habitat;
8. Community living, and cultural property protection;
9. Chance find identification and recovery;
10. Dust control;
11. Noise & vibration control;
12. Emissions (NO_x, SO_x, CO, CO₂) from heavy equipment;
13. Public & worker safety and health;
14. Emergency response;
15. Community and construction traffic control;
16. Domestic and solid waste;
17. Construction & operation–phase contaminant waste;
18. Hazardous chemicals (e.g., chlorine);
19. WTP sludge management & offsite landfill disposal;
20. Raw water quantity & quality sustainability; and
21. Expansion of wastewater treatment.

52. The sub-management plans should respond directly to the detailed designs of the project.

Recommendation for Mitigation and Monitoring Plans: The mitigation and monitoring requirements identified in EMP need to be expanded with prescriptive detail. The plans must respond to any supplemental impacts assessment to the IEE. Detailed mitigation and monitoring plans should be presented in separate tables with the following suggested table row and column headings:

1. Mitigation Plan

Major rows:

1. Pre-construction-design phase
2. Construction phase
3. Commissioning-operation phase

Minor rows:

- a) Impact type (as per a sub-environmental management plan)
- b) Detailed impact mitigation measures of impact type

Columns:

4. Project activity
5. Potential impact
6. Description of mitigation
7. Location
8. Timing
9. Reporting frequency
10. Estimated cost
11. Responsibility (implementation & supervision)

2. Monitoring Plan

1. Impact & environmental indicator(s)
2. Location
3. Timing
4. Methods/protocol and environmental standards
5. Timing
6. Reporting frequency
7. Estimated cost
8. Responsibility (implementation, supervision)

D. Subproject Performance Indicators

53. Performance measures are needed for the EMP. These indicators provide integrated measures of the overall environmental, social, and operational performance of the EMP. Example indicators are quantity and quality of raw and treated water, frequency and type of stakeholder and public complaints.

E. Grievance Redress Mechanism

Recommendation: The EMP needs a clearly defined mechanism by which affected public and stakeholders can submit and have addressed grievances or complaints of the subproject as it is implemented.

F. Environmental Safeguard Regulatory Frameworks, & Standards

54. The GoV regulatory framework for environmental safeguards presented in IEE needs to be updated. Decree 21 and Circular 05 have been replaced by Decree 29 and Circular 26. Decree updates the EA screening criteria of Decree 21. The ADB safeguard framework needs to be elaborated to reference the safeguard frameworks (e.g., RF & EARF) that have been developed to support of the MFF funding mechanism for the subproject. Updates to the GoV regulatory framework can be included with the finalization of the EMP at the detailed design stage. Similarly, the guiding safeguard frameworks, and updates to the relevant national (i.e., QCVN & TCVN) and international environmental standards (e.g., World Bank Group 2007) can be included with final EMP.

V. THUA THIEN HUE WATER SUPPLY PROJECT

A. Overview:

55. The water supply project in Thua Thien Hue is comprised of: a) new and upgraded WTPs with expanded distributions, b) new pumping and off-take stations; and c) new treated distribution networks. Existing or new reservoir supply developments will not occur as part of subproject. Notable characteristics of the Thua Thien Hue project with respect to managing potential environmental impacts are as follows:

- a) the project is spread over the entire province in 11 defined subproject “impact areas” in which the 8 new WTPs, 5 new PSs, and an approximately 1075 km of new of 50-1200 mm distribution will be built - which identifies potential cumulative impacts of the project;

- b) the IEE was prepared when specific locations of some WTPs & associated PS & distribution corridors of subprojects were not finalized; and
- c) four ecological protected areas of the province are affected by the projects.

56. The overall project breadth and characteristics increase the importance of the environmental management of the 11 subprojects as they are implemented.

B. IEE

1. General

57. Despite the absence of finalized sites for some of the WTPs and associated physical facilities, the IEE provides a comprehensive but declared “preliminary scope” of potential impacts of the project at all eleven subproject “impact” areas. The IEE disaggregates well known potential impacts of water supply development into the pre-construction, construction (e.g., land clearing, vegetation removal, soil erosion, noise, dust, air CO, NO_x SO_x emissions, solid and domestic waste, soil & water pollution, public & worker safety), and operational phases (erosion, discharge of contaminated sludge, water consumption) of the project.

58. The IEE updates the initial ADB rapid environmental assessment (REA) on which the ADB Category B project classification is based to include affected ecological protected areas, and issues associated with extraction of raw water from rivers, and disposal of treatment sludge. Based on the retro-REA the IEE identified raw water sustainability of small source rivers, and management of treatment sludge as key areas for further examination at detailed design stage and for EMP.

2. Affected Protected & Sensitive Ecological Areas

59. Thua Thien Hue province is relatively rich in ecological resources. As reported in IEE some subprojects are adjacent and will potentially affect three ecological sensitive or protected areas defined by Phong Dien Nature Reserve, Historical & Cultural Forest near Hue, the Bac Van Landscape Protection Site, and the Tam Giang – Cau Hai Lagoon. However, subprojects will also directly affect the WWF Green Belt of forest, and the Bach Ma National Park.

60. Moreover, facilities of two subprojects (Loc Tri Loc An) are located inside the core and buffer zones of the Bach Ma National Park. The A Luoi subproject is near the Phong Dien Nature Reserve and inside the WWF Green Belt, and the Chan May component is adjacent to the Bac Van landscape Protection Site. The potential discharge of sludge from many of the new WTPs could negatively affect downstream water quality and ecosystem of the Tam Giang – Cau Hai marine lagoon.

61. The implementation of major physical development interventions such as WTPs, river intakes, and pipelines in *or near* ecological protected areas – referred as *critical habitat* - normally automatically requires that a Category A¹¹ EIA be conducted for the project. However, development projects can occur in these critical habitat areas if it is clear that no measureable adverse impacts to habitat, biodiversity, and ecosystem function – as detailed by the SPS (2009).

¹¹ ADB Environmental Categorization

62. Further, when such sensitive habitat is directly affected the borrower must look closely at affected areas by: a) retaining experts [knowledgeable of the affected critical habitat] to assist in the assessment of potential impacts on the critical habitat; and b) implement project consistent with management plan of protected area including consulting protected area sponsors, managers, and local community; and c) consider implementing additional activities to enhance or promote conservation aims of the protected area¹² (SPS 2009).

63. The Thua Thien Hue project was assigned Category B level of assessment which suggests there are no potential permanent or irreversible impacts of the water supply developments on sensitive ecological attributes of the affected protected areas. The IEE indicates that the raw water intake and pipeline of the Loc Tri subproject will occur in the administrative-ecotourist area of the core zone of Bach Ma NP, and that management board of the BMNP must be involved with the detailed designs for the Loc Tri and Loc An subprojects. The future direct involvement of BMNP is important.

64. However, the IEE understates the actual impact assessment on the affected core and buffer zone. In particular:

1. no evaluation of specific effects of the physical intrusion of the Loc Tri and Loc An subprojects into the core & buffer zones of the Bach Ma NP on terrestrial and aquatic fauna and flora and biodiversity is provided in IEE; and
2. the existing management, or experts of the potentially affected protected areas did not appear to have been closely consulted, or to have been part of the IEE team.

Recommendation:

1. If possible at detailed design, the decision to place Loc Tri and Loc An subprojects components in the core and buffer zones of Bach Ma NP should be reviewed. And alternate location(s) for the raw water intake and WTP outside the core and buffer zones should be investigated.
2. If #1 not possible a focused, supplementary assessment of the potential impacts of the Loc Tri and Loc An developments on the Bach Ma NP be undertaken as part of the finalization of EMP during the detailed design phase. In close consultation with Bach Ma NP management board the assessment should start with the existing wildlife and habitat inventory of the specifically affected areas.
3. Management of the Phong Dien NR, and expert representatives of the WWF Green Belt, Tam Gieng – Cau Hai coastal lagoon, and Bac Hai Van Forest should be recruited to be involved with the detailed designs of adjacent subprojects (i.e., Nam Dong, A Luoi, Quang Te, Chan May) to identify ways to minimize impacts.

3. Raw Water Sustainability

65. The IEE identifies the potential for unsustainable raw water supply for some subproject components due to low source river flow in dry season. The source rivers in question are the Nong river for Loc Bon, Truoi river for Loc An, and the Khe Su river for Loc Tri. Importantly, the IEE proposes Environmental Flow Assessments (EFA) of the source rivers to ensure that dry season low flows meet the demands of the WTPs, while preserving other ongoing ecological

¹² para 28-30 of footnote 6

and human uses of the rivers. However, the timing and design parameters for the EFAs were not specified, which puts at risk the eventual implementation of the assessments.

Recommendation:

At detailed design the sustainability of all source rivers be reviewed with available hydrological and demand data with special focus on the small source rivers for the new WTPs. EFAs as described in IEE should be designed and conducted before the specific subproject designs are finalized.

4. Public Consultation

66. At the time the IEE was prepared consultation of the community affected by the entire Thua Thien Hue subproject project had occurred in only the three of the eleven impact areas defined by Quang Te, A Luoi, and Nam Dong.

Recommendation:

Public consultation needs to occur in the other eight subproject areas as part of the detailed design phase. The EMP can then be updated accordingly. The remaining subproject consultations along with the three completed consultations should form the basis of the grievance redress mechanism that was defined by the IEE, for any necessary follow-up consultations during the operation phase.

C. EMP

1. Pre-construction Phase

67. The single project-wide EMP of IEE provides draft mitigation and monitoring plans in table format as guided the EARF. However, the pre-construction-detailed design phase of the 11 project components is not included. Pre-construction-detailed design preparations for the environmental management of the construction and later operation phases of the project are very important given the spatial extent and diversity of the 11 subproject impact areas, and because the detailed design stage will specify fundamental elements such as final locations of WTPs. Further, the need for additional study of the sustainability of raw water supplies, and review of the placement of Loc Tri subproject inside the Bach Ma NP need to be explicit in a pre-construction-detailed design phase.

2. Subproject Area EMPs

68. An EMP for each of the 11 subproject impact areas is needed instead of a single EMP for all impact areas. While many mitigations and monitoring requirements of the EMPs will be similar, stand-alone subproject area EMPs which address area-specific potential impacts (e.g., nature reserves & low flow rivers) will greatly assist PMUs, and will maximize the likelihood that potential impacts of individual subproject area will be environmentally managed.

69. Further from above, subproject area-specific EMPs are more easily developed into construction environmental management plans (CEMP) by construction contractors. However, to contradict the IEE, contractors must prepare the CEMPs based on the EMPs as part of their bid documents, not after the contract has been awarded as stipulated by IEE. EMPs should be developed for each subproject area, and consider the following sub-environmental management plans to be formulated during the pre-construction- design phase:

1. GoV approvals (e.g., environmental safeguards, construction permits);
2. UXO survey, removal and disposal;
3. Forest clearing & tree removal;
4. Reforestation and site restoration
5. Excavation, blasting, & soil/rock removal;
6. Contaminated soil testing, removal, and disposal;
7. Erosion, landslide, and sedimentation;
8. Rare/endangered species or critical habitat;
9. Community living, and cultural property protection;
10. Chance find identification and recovery;
11. Dust control;
12. Noise & vibration control;
13. Emissions (NO_x, SO_x, CO, CO₂) from heavy equipment;
14. Public & worker safety and health;
15. Emergency response;
16. Community and construction traffic control;
17. Domestic and solid waste manage;
18. Construction & operation–phase contaminant waste;
19. Hazardous chemicals (e.g., chlorine);
20. WTP sludge management & offsite landfill disposal;
21. Raw water quantity & quality sustainability; and
22. Expansion of wastewater treatment.
23. EFA for small rivers during design

70. The individual EMPs will address potential impacts of the following official and unofficial protected areas: Bach Ma National Park (Loc Tri, Loc An), WWF Green Belt (A Luoi, Nam Dong), Historical & Cultural Forest of Hue (Quang Te), Phong Dien Nature Reserve (A Luoi), Bac Hai Van Special Use Forest (Chan May), and the Tam Giang – Cau Hai Lagoon (all WTPs discharging sludge).

D. Institutional Responsibilities

1. PMU

71. The EMP insightfully identifies the need for an overarching Environmental Monitoring Unit (EMU) to oversee the environmental management of all construction packages across the 11 subprojects. And as indicated, the EMU is aptly represented by all key interests in the environment of Thua Thien Hue (e.g., HUEWACO, DoNRE, protected area management boards PPC, DARD, DoH, District/commune PPCs).

72. However, of greater importance is sufficient representation of the HUEWACO-dedicated PMU at all 11 subprojects. It is the PMU and dedicated environmental staff (i.e., senior environmental consultant, & internal environmental officer in IEE) that oversee and manage implementation of the subproject EMP with support from the implementation consultant. Thus, the planned single PMU needs the staffing & expertise capacity to effectively manage implementation of all 11 subproject EMPs and contractors.

E. Subproject Performance Indicators

73. Performance measures are needed for the EMPs. These indicators provide integrated measures of the overall environmental, social, and operational performance of the EMP. Example indicators are quantity and quality of raw and treated water, frequency and type of stakeholder and public complaints, frequency of ecotourists)

F. Environmental Safeguard Regulatory Frameworks, & Standards

74. The GoV regulatory framework for environmental safeguards presented in IEE needs to be updated. Decree 21/2008/ND-CP and Circular 05/2008/TT-BTNMT have been replaced by Decree 29/2011/ND-CP and Circular 26/TT-BTNMT. Decree 29 updates the EA screening criteria of Decree 21. Updates to the GoV regulatory framework are necessary in order to obtain GoV clearances and approvals. Similarly, updates to the relevant national (i.e, QCVN & TCVN) can be included with final EMP.

VI. EXPANDED SOUTH THU DAU MOT WATER SUPPLY PROJECT, BINH DUONG

A. Overview

75. The Binh Duong Water Supply & Sewerage Environment Co (BIWASE) will expand the existing water supply system in Thu Dau Mot with the addition of the following facilities:

- new WTP (45,000 m³/day) & pumping station;
- new intake & pumping station at Dong Nai river;
- raw water main (4.9 km, DN1200); and
- a new treated water distribution network (17.8 km, DN50 – 1000).

76. The raw water collection and treatment facilities will be placed on BIWASE property adjacent to the existing facilities of the Di An water treatment system. Affected BIWASE property is situated in a high density urban, industrial, and residential area. The new treated main will lay along the right-of-way of the provincial road through Thu Dau Mot town, Di An town, and Thuan An town of Tan Uyen district of Binh Duong province.

B. GoV EPC vs IEE

77. To serve the requirements of the GoV, the BIWASE prepared an Environmental Protection Commitment (EPC) for the subproject as dictated by the screening criteria of Decree 29/2011/ND-CP¹³ which determine whether a District-managed EPC is needed, or a more in depth EIA is required which is overseen by the provincial DoNRE. The specific screening criterion that distinguishes whether a GoV EPC or EIA is required is the capacity of a new or upgraded WTP. The planned capacity of the new WTP of 45,000 m³/day falls below the threshold of 50,000 m³/day which means a GoV EPC is required.

78. The feasibility study (FS) prepared by the Han Minh Trading-Construction Consulting Co. for BIWASE identified the water supply developments as comprising an ADB Category B project. The EPC was developed further into an EA to meet the requirements of an ADB IEE

¹³ Replaces Decree 21/2008/ND-CP that is cited in EPC with minor modifications to screening criteria.

(Category B). However, the FS and updated EA reference the Operational and Safeguard Policies (OP/BP) for EA of the World Bank that were applied to the WB-funded Viet Nam Urban Water Supply Project (VUWSDP) for the Category B designation.

79. The inadvertent reference to WB environmental safeguard criteria for a Category B ADB project is inconsequential because the key outcome is a GoV EPC providing the basis for the environmental assessment and environmental management plan that were ultimately prepared for the subproject. The single significant difference between an ADB Category B EIA and a GoV EPC is the impact assessment for the latter does not require formal public consultation. Notwithstanding the EPC origin, the EA & EMP that were prepared provide a much more detailed and comprehensive impact assessment than normally prepared for a GoV EPC.

1. Potential environmental impacts

80. The EA insightfully identifies the main environmental impacts of the subproject as being the construction phase-related disturbances to the local community. The EA clarifies that the BIWASE property on which the new raw water intake and main, WTP, and treated water pump house will be developed is located in a highly developed urban and industrial area of southern Binh Duong which likely nullifies potential impacts on critical wildlife habitat or rare or endangered species, while also generally minimizing potential impacts on the natural environment given the affected area is in a highly developed state.

81. The Binh Duong DoNRE indicated the absence of these valued ecosystem components as well as the absence of any protected areas in the area. Similarly, the PC of Tan Uyen district and Thuan town indicated the absence of any cultural property that could potentially be affected by components of the subproject. The highly urbanized and industrial area in which the subproject will be located also prevents potential impacts from land subsidence or flooding from civil works. Good drainage and hard packed alluvial soils that exist along the affected areas will naturally mitigate these potential impacts.

82. As indicated by the EA, the primary impacts of the subproject are construction phase-related noise, dust, truck traffic, traffic interruption, solid and domestic waste production. The sustainability of raw water supply is not considered an issue due to the comparatively large discharge (m³/day) of the Dong Nai River at the point raw water will be extracted. Ambient water quality of the Dong Nai river will be monitored regularly to ensure that the level of raw water treatment by the new WTP remains adequate.

2. Quantitative Impact Estimation

83. The EPC provides detailed quantitative estimates of the volume of excavated soils, noise levels created from machinery operation, domestic solid and liquid waste production, increases in traffic, estimates of dust and emissions from construction vehicles and traffic. The quantified estimates of physical disturbances provide the basis for estimating potential impacts of the construction phase on the local community, and necessary impact mitigation measures to manage potential impacts.

84. For the operational phase the EPC also provides estimates of the production of waste treatment by-products, such as alum sediment, sludge, and lime. Domestic waste at the WTP is also estimated.

3. Public Consultation

85. As indicated above the single significant shortcoming of a GoV EPC, and thus, the environmental safeguards for the Binh Duong subproject is the absence of formal public consultation. Formal public consultation will need to be initiated ahead of the detailed design phase, and continued as part of the implementation of the environmental management plan.

C. Environmental Management Plan

86. A GoV EPC tends to focus on the waste streams of a project with relatively less attention given to other potential impacts. As a result the EMPs of an EPC often are light, and do not provide sufficient direction to the implementing agency (IA) and project management unit (PMU) of the project. However, the EMP including mitigation and monitoring plans prepared for the Binh Duong subproject is relatively detailed and comprehensive compared to the EMPs prepared for standard EPCs. Mitigation measures for impacts are specified as are environmental monitoring requirements.

87. Nonetheless, the EMP would benefit from additional detail and restructuring with attention to the environmental monitoring plan. The provision for explicit sub-mitigation plans for the construction phase impacts is needed. As presented the EMP would be unnecessarily difficult to follow and be developed into CEMPs by bidding contractors. More description detail and better organization is needed.

88. Using the existing content and supplemental material as needed, a new EMP will be written which will be consistent with the updated EMPs of the other subprojects of the PFR-2. Public consultation will be included.

89. The GoV regulatory framework for EIA has changed which will be addressed in the updated EMP. Specifically, Decree 21/2008/CP-ND and Circular 05/2008/TT-BTNMT have been replaced by Decree 29/2011ND-CP and Circular 26/2011/ND-CP, respectively. However, as indicated above the level of assessment (EPC or EIA) specified by the new policy has not changed.

90. EMP should consider the following sub-environmental management plans to be formulated during the pre-construction- design phase:

1. GoV approvals (e.g., environmental safeguards, construction permits);
2. UXO survey, removal and disposal;
3. Tree and vegetation removal;
4. Site restoration;
5. Excavation, blasting, & soil/rock removal;
6. Contaminated soil testing, removal, and disposal;
7. Erosion, landslide, and sedimentation;
8. Community living, and cultural property protection;
9. Chance find identification and recovery;
10. Dust control;
11. Noise & vibration control;
12. Emissions (NO_x, SO_x, CO, CO₂) from heavy equipment;
13. Public & worker safety and health;
14. Emergency response;
15. Community and construction traffic control;

16. Domestic and solid waste manage;
17. Construction & operation–phase contaminant waste;
18. Hazardous chemicals (e.g., chlorine);
19. WTP sludge management & offsite landfill disposal;
20. Raw water quantity & quality sustainability; and
21. Expansion of wastewater treatment.

1. Grievance Mechanism

91. Presumably as a result of public consultation (PC) not being required for a GoV EPC, a Grievance Redress Mechanism for community stakeholders was omitted. The declaration of information disclosure to stakeholders was provided, however, the procedure for the community to lodge an inquiry or complaint of the subproject through the construction and operational phases of the project was not developed.

2. Performance Indicators

92. A list of key indicators of the overall performance of the EMP and operation of the commissioned water supply systems is missing from EMP. An explicit list of indicators and timing will be provided in the updated EMP.

VII. WATER SUPPLY DEVELOPMENT IN DONG HA AND SURROUNDING AREA, QUANG TRI PROVINCE

A. Overview

93. The subproject in Dong Ha and suburbs is comprised of four water supply development components located in three geographic areas of the province. From the Feasibility Study report the components are summarized as follows:

- Quat Xa water supply system (30,000 - 60,000 m³/day), including raw water collection, treatment plant and pipeline transmission and distribution network;
- Improving Tan Luong WTP (15,000m³/day) & network of transmission and distribution in Dong Ha City.
- Improving and upgrading water supply system of Quang Tri Town (13,500m³/day); and
- Improving and upgrading water supply system of Lao Bao town from 3,000m³/day 6,000m³/ day

B. GoV EIA¹⁴

94. A GoV EIA was prepared pursuant to the screening criteria of Decree 21/2008/ND-CP. The unstated criterion for an EIA versus a GoV Environmental Protection Commitment (EPC)

¹⁴ On April 4, 2012 the EIA was revised by QTWASUCO to meet the requirements of an IEE of SPS (2009). The requirements for upgrading the EMP provided in the IEE did not change.

would have been the future capacity of the WTP of Quat Xa (60,000 m³/day) which exceeds the 50,000 m³/day threshold distinguishing the requirement for a GoV EPC or EIA.

95. The EIA begins with a very helpful extensive introduction to the entire MMF process including and subprojects of PFR-1 and PFR-2, the EARF, sources of data, and methods used in the EIA. The apparent thorough public consultation process implemented in all affected districts & communes & towns was described. The introduction to the EIA concluded with a list of all persons involved with the execution, and EIA report preparation defined by the Quang Tri Water Supply & Construction One-man Limited Company, and the Quang Tri Centre for Monitoring and Environmental Technology.

96. The EIA provides a detailed account of the design of water supply components including the water treatment specifications. Of particular note are the identified sources and levels of potential impacts of the subproject components. The EIA, however, does not adhere closely to the IEE format specified by the SPS (2009), and is difficult to follow and understand in places.

97. The locations and composition of the different subproject components are difficult to discern from the document. The main text would benefit greatly from a series of maps showing the locations of all subproject component sites and raw water sources, locations of affected towns, provincial ecological protected areas, as well as the sites of the extensive environmental baseline sampling of ambient air, water, groundwater, and soil quality monitoring sites that was conducted.

98. The inventory of fauna and flora is brief compared to the ambient quality physical parameters defined above. The presence of absence of protected areas or cultural property & values in the component sites was not documented in EIA. No rare or endangered species from the Viet Nam Red Book are presented in the affected areas. Though the project is not near the Huong Hoa Nature reserve

99. The EIA provides comprehensive and detailed estimates potential impacts of the subproject. Provided are estimates of the volume or area of affected or removed natural urban features and sites, estimates of the number of trees & crops that will be removed, the length of sidewalks and other man-made structures that will be affected, the quantity of solid and liquid waste produced during construction and operation phases. The EIA also estimates the quantity of gas emissions, dust, and noise produced..

C. Environmental Management Plan

100. The EMP prepared in support of the EIA in general follows the required format of the SPS (2009). The pre-construction phase is missing important directives for the detailed design phase which are needed by the implementation consultants, PMU, and bidding contractors. Further, the key tables outlining the impact mitigation plan and environmental monitoring plan are missing information. To facilitate easy implementation the EMP should be restructured and content upgraded in order to maximize the ease with which the EMP can both be upgraded at detailed design phase, and subsequently implemented.

101. EMP should consider the following sub-environmental management plans to be formulated during the pre-construction- design phase:

1. GoV approvals (e.g., environmental safeguards, construction permits);
2. UXO survey, removal and disposal;

3. Forest clearing & tree removal;
4. Reforestation and site restoration
5. Excavation, blasting, & soil/rock removal;
6. Contaminated soil testing, removal, and disposal;
7. Erosion, landslide, and sedimentation;
8. Rare/endangered species or critical habitat;
9. Community living, and cultural property protection;
10. Chance find identification and recovery;
11. Dust control;
12. Noise & vibration control;
13. Emissions (NO_x, SO_x, CO, CO₂) from heavy equipment;
14. Public & worker safety and health;
15. Emergency response;
16. Community and construction traffic control;
17. Domestic and solid waste manage;
18. Construction & operation–phase contaminant waste;
19. Hazardous chemicals (e.g., chlorine);
20. WTP sludge management & offsite landfill disposal;
21. Raw water quantity & quality sustainability; and
22. Expansion of wastewater treatment.
23. EFA for small rivers during design

1. Performance Indicators

102. A list of key indicators of the overall performance of the EMP and operation of the commissioned water supply systems is missing from EMP. An explicit list of indicators and timing will be provided in the updated EMP.

2. Public Consultation

103. A grievance redress mechanism for the engagement of stakeholders throughout the construction and operation phases of the subproject has been described in the EMP. However, the follow-on formal public consultation and information disclosure of the project needs to be articulated as part of the EMP.

VIII. COMMON REQUIREMENTS OF EMPS

The following potential issues of the subprojects need to be reviewed and addressed by the EMPS of the subprojects.

- 1) Sustainability of raw water quantity and quality for all water supply systems
- 2) A specific cultural property & value sub-plan including chance finds (as above) should be included in each EMP.
- 3) Public consultation initiated during the IEE or EIA need to be continued and expanded during the pre-construction phase of subproject implementation. If possible the consultations should jointly review planned resettlement and compensation measures.
- 4) The addition of the only GoV regulation or policy on coastal environmental quality (QCVN 10:2008/BTNMT: *National Technical Regulation on Coastal Water Quality*) will be included in the EMPS of coastal subprojects.

- 5) The grievance redress mechanism component of environmental & social safeguards, which normally is found in the IEE, will be updated in the MPs where necessary.
- 6) The EMPs will underscore the need to re-evaluate at detailed design stage the ability of existing wastewater collection and treatment infrastructure to assimilate the additional wastewater that will be created by the water supply developments.
- 7) Current domestic and international standards for occupational safety & health are needed in EMP.