

Environmental and Social Compliance Audit Report


September 2020

VIE: Binh Duong Water Treatment Expansion Project

Prepared by IBIS Environmental and Social Consulting Asia Pte. Ltd, for the Binh Duong Water Environment Joint Stock Company and the Asian Development Bank.

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5 SEPTEMBER 2020

FINAL REPORT

Environmental & Social Due Diligence Report on Tan Hiep Water
Treatment Plant Expansion

Binh Duong Province, Viet Nam

I FINAL REPORT

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List of abbreviations

ADB	Asian Development Bank
AH	Affected Household
BIWASE	Binh Duong Water-Environment Joint Stock Company
CAP	Corrective Action Plan
CARB	Compensation, Assistance and Resettlement Committee
CPC	Commune People's Committee
CSC	Construction Supervision Consultant
DCARB	District Compensation, Assistance and Resettlement Board
DMS	Detailed Measurement Survey
DONRE	Department of Natural Resources and Environment
E&S	Environmental & Social
EFR	External Factor Review
EHS	Environmental, Health & Safety
EIA	Environment Impact Assessment
EM	Ethnic Minorities
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESCAR	Environmental and Social Compliance Audit Report
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GHG	Greenhouse Gas
GRM	Grievance Redress Mechanism
H&S	Health & Safety
IFC	International Finance Corporation
ILO	International Labour Organisation
IP	Indigenous Peoples
IR	Involuntary Resettlement
JSC	Joint Stock Company
LFDC	Land Fund Development Centre
LURC	Land Use Right Certificate
MoNRE	Ministry of Natural Resources and Environment
OHS	Occupational Health & Safety
PAC	Poly Aluminium Chloride
PMU	Project Management Unit
PPC	Provincial People's Committee
PPE	Personal Protective Equipment
RoW	Right of Way
SEP	Stakeholder Engagement Plan
WBG	World Bank Group
WTP	Water Treatment Plant

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1 INTRODUCTION

1.1 BACKGROUND

IBIS Environmental and Social Consulting Asia Pte. Ltd. (“IBIS”) was engaged by Asian Development Bank (“ADB” or “the Client”) to act as an Independent Environmental and Social (“E&S”) Consultant (“the Consultant”) to carry out an Environmental and Social Compliance Audit (“the Audit” or “ESCA”) of the expansion works of Tan Hiep Water Treatment Plant (“the WTP”) located in Binh Duong Province, Viet Nam (“the Project”).

The WTP currently has a water treatment capacity of 119,500 cubic metres per day (m³/d) and is owned and operated by Binh Duong Water Environment Joint Stock Company (“BIWASE”), formerly known as Binh Duong Water Supply Sewerage Company. The Project, which is the expansion of the WTP, will increase the WTP’s water treatment and supply capacity by an additional 100,000 m³/d to a total of 219,500 m³/d. The expansion works under the Project primarily involve the construction and expansion works at the WTP and its raw water intake station (“the Intake Station”), and installation of 9 kilometres (km) of raw water transmission pipelines between the WTP and the Intake Station along an existing right of way (RoW). These expansion works are considered as the Phase 1 expansion (Phase 1) which will take place within the existing physical footprint of the WTP.

It is understood that BIWASE has planned for Phase 2 expansion works (Phase 2) at the WTP in the future in an additional expansion area located immediately south of the existing WTP on an additional land area of 43,531.8 square metres (m²) recently acquired in 2017/2018, and this land acquisition process was completed in 2018/2019. **It should be highlighted that ADB’s proceeds are not intended for use on the Phase 2 expansion works of the WTP.**

Based on currently available information, the additional water supply will be mainly distributed through the existing water distribution network. The purpose of the Project is to meet the increasing water supply demand for both domestic consumption and industrial zone requirements (mainly in Ben Cat Town, Tan Uyen Town and Thu Dau Mot City). A detailed description of the existing WTP and the Project is provided in **Chapter 2**.

The total expansion cost for both Phase 1 and Phase 2 expansion works is estimated at US\$50 million, of which the 100,000 m³/d additional water production capacity and works within the existing footprint of the WTP, referred to as Phase 1, is estimated at US\$16 million. If approved to proceed, ADB will provide corporate financing to BIWASE of up to US\$8 million for the purchase of equipment, installation of new distribution pipelines in the existing RoW and WTP facility expansion. Japan International Cooperation Agency will provide the remaining US\$8 million.

1.2 REPORT STRUCTURE

This report documents the findings of the Audit and is structured in the following manner:

- **Chapter 1 Introduction** provides a brief introduction to the Project and this Audit report structure;

- **Chapter 2 Project Setting and Description** provides background information of the Project, including its location, current status, and key activities at the Project site;
- **Chapter 3 Scope of Work** describes the objectives, scope of work, methodology, and key tasks undertaken as well as applicable and relevant requirements for the Project, i.e., the Applicable Standards;
- **Chapter 4 Environmental and Social Compliance Review** details the observations and findings made during the Audit and corresponding proposed corrective actions;
- **Chapter 5 Conclusion and Corrective Action Plan** summarises the Audit findings and proposes corrective actions in a consolidated and tabular format; and
- Four Annexes provide supplementary information collected during the course of the Audit, including a list of key documents reviewed during the course of the Audit (*Annex A*), a list of interviewees (*Annex B*), an external factor review (*Annex C*), and photographs taken at the Project site in May 2020 (*Annex D*).

1.3 LIMITATIONS

The work was carried out in general accordance with IBIS' agreement with ADB. Note that IBIS has worked with ADB's national consultants who supported the Audit, including document review, reporting and undertaking the site visit held between 18th and 20th May 2020. Due to COVID-19, members of IBIS did not attend the site visit. Instead, IBIS guided the site visit remotely.

All conclusions and recommendations made represent the professional opinions of the ADB's national consultants and IBIS consultants involved with the project, and the results of this report should not be considered a legal interpretation of existing regulations.

IBIS assumes no responsibility or liability for errors in the public data utilised, information provided by BIWASE/the Project, or statements from sources outside of IBIS, or developments resulting from situations outside the scope of this assignment. We make no warranties, expressed or implied, including, without limitation, as to merchantability or fitness for a particular purpose.

All data and information provided were assumed to be accurate and up to date.

2 PROJECT SETTING AND DESCRIPTION

The Project, for which ADB is considering providing corporate financing, involves the construction and installation of an additional water treatment and supply capacity of 100,000 m³/d to the existing Tan Hiep WTP located in Binh Duong Province, Viet Nam. This expansion is referred to as the Phase 1 expansion by BIWASE and is situated within the existing footprint of the Tan Hiep facilities (including pipeline RoW), which were acquired in 2007/2008 (please see further details in **Chapter 4** below).

2.1 INTRODUCTION TO BIWASE

BIWASE was formerly a government institution and then later became a private corporate entity in 2005. A brief history of BIWASE is provided below:

- Prior to 1975, BIWASE was originally known as Binh Duong Water Supply Center. Its name was changed to Public Work and Water Supply Enterprise, which was managed under the People's Committee of Thu Dau Mot town;
- On 15th October 1991, it was replaced by a state-owned enterprise of "Song Be Water Supply Sewerage Enterprise" which was established based on a decision signed by Song Be Provincial People's Committee (PPC) and had the main functions of treatment, supply and installation of distribution water pipes for consumers;
- On 1st January 1997, Song Be Province was divided into two distinct new provinces, namely Binh Duong Province and Binh Phuoc Province. Song Be Water Supply Sewerage Enterprise was then changed to Binh Duong Water Supply Sewerage Company officially on 13th April 1997. The company was set up in the form of a state-owned enterprise under the direct management of Binh Duong PPC and supervised by the Department of Construction from an economic and technical perspective; and
- On 21st December 2005, Binh Duong PPC decided to convert the state-owned enterprise, Binh Duong Water Supply Sewerage Company, to a private corporate entity named Binh Duong Water Supply Sewerage Environment Limited Company (BIWASE) it is today.

Operating predominantly in Binh Duong Province, BIWASE's current business areas include:

- Water supply representing approximately 60% of its total revenue;
- Solid waste transportation and management representing approximately 20% of its total revenue;
- Collection and treatment of wastewater representing approximately 2% of its total revenue; and
- Other business activities representing approximately 18% of its total revenue.

Tan Hiep WTP is one of the business units of BIWASE in Binh Duong Province.

2.2 PROJECT SITE AND ITS PHYSICAL SURROUNDING

Initially established in 2008, Tan Hiep WTP is owned and operated by BIWASE and has an existing water treatment and supply capacity of 119,500 m³ per day. The Project to expand the capacity of the WTP by 100,000 m³/d is to provide water services to meet the increasing needs for domestic consumption and industrial zone requirements mainly in Ben Cat Town, Tan Uyen Town and Thu Dau Mot City in Binh Duong Province. The three key components of the Project are:

- a) An expansion of the water treatment capacity within the existing footprint of Tan Hiep WTP by 100,000 m³/d;
- b) An expansion of the existing raw water intake facility and equipment (i.e. pumps) at the Intake Station, which is located along the Dong Nai River approximately 7 km southeast of the WTP; and
- c) The installation of approximately 9 km of raw water transmission pipelines from the Dong Nai River to the WTP within the existing RoW.

The Project was approved in accordance with *the Acceptance Letter No. 3580/UBND-KTN dated on 17th August 2018 of Binh Duong PPC and Decision No.394/QD-CPN.MT dated 29th March, 2019*, and the key features of the overall expansion works are summarised in the table below (*Table 2-1*) in accordance with the updated Environmental Impact Assessment (EIA), dated June 2020 (“the June 2020 EIA”). At the time of this report preparation, the June 2020 EIA is pending governmental approval (*IBIS Note: The status of the EIA approval is to be updated prior to finalisation of this report*).

Table 2-1 Key Features to be Constructed during the Phase 1 Expansion

NO.	KEY FEATURES TO BE CONSTRUCTED OR INSTALLED*
I	Construction of a water treatment plant with a capacity of 100,000 m³/d*
a.	A mixing tank
b.	Three reactor tanks
c.	Three sedimentation tanks
d.	Six filtration tanks
e.	A clean water storage tank with a capacity of 20,000 m ³
f.	One chlorinator (up to 4 kg per hour)
g.	One chlorine cylinder (950 kg per cylinder) Please note that BIWASE confirmed that this chlorine storage house under the Project would be developed by converting an existing building with an approximate floor area of 70 m ² and would be separate to the WTP’s existing chlorine storage house. The existing chlorine storage house is reported to have four chlorine cylinders (950 kg per cylinder), according to the June 2020 EIA.
III	Raw water transmission pipelines
h.	Installation of raw water transmission pipelines with a total length of 9 km

* The information was extracted from the June 2020 EIA.

Key activities to be undertaken at the current WTP and, upon completion, by the Project include:

- a) Abstraction of raw water from the Dong Nai River at the Intake Station approximately 7 km southeast of the WTP;
- b) Transfer of the abstracted raw water via the transmission pipelines to the WTP;
- c) Treatment of the abstracted raw water at the WTP using water treatment chemicals, including lime, poly aluminium chloride (PAC), and chlorine, through a series of water treatment processes, including mixing, sedimentation, filtration, and chlorination; and
- d) Distribution of clean (treated) water through its water distribution network to end users.

As noted above, future expansion under Phase 2 is being planned by BIWASE and it was not examined or assessed in the June 2020 EIA. The layout of the WTP post Phase 1 and Phase 2 expansion are depicted in *Figure 2-8*. The Phase 2 expansion works will be situated at the southern portion of the WTP covering an additional land area of approximately 43,531.8 m². However, as noted earlier, ADB proceeds are not used in the Phase 2 expansion. Whilst the Phase 2 expansion is not considered part of the Audit, noteworthy E&S observations associated with the Phase 2 expansion were discussed, where available and relevant.

To provide some context for the E&S findings presented in Chapter 4, each of the three components of the Project and the Dong Nai River are described below.

2.2.1 An expansion of the water treatment capacity of Tan Hiep WTP

Established in 2008, Tan Hiep WTP is located in Tan Hiep ward, Tan Uyen town, Binh Duong Province approximately 40 km north east of Tan Son Nhat International Airport in Ho Chi Minh City. The WTP (excluding the Intake Station) occupies a total land area of 11.96 hectares (ha), including its existing land (7.61 ha) and the recently acquired land (4.35 ha) immediately to the south. The footprint of the WTP is roughly square in shape (see *Figure 2-1* below). The WTP is under management of BIWASE and has an existing water treatment and supply capacity of approximately 119,500 m³/d. According to BIWASE, it employs a total of 54 full-time employees and operates 24 hours a day, 7 days a week. Post-completion of the Project, Tan Hiep WTP will have an overall water treatment and supply capacity of 219,500 m³/d.

According to the June 2020 EIA, the existing WTP was developed in four consecutive phases between 2008 and 2017. For each phase of the expansion, an additional 29,500 to 30,000 m³/d capacity was added to the WTP.



Figure 2-1 Aerial Imagery of Tan Hiep Water Treatment Plant as of February 2018

Based on Google Earth aerial imagery of the WTP and its vicinity, dated in February 2018, and information provided by BIWASE, land uses in the immediate vicinity of the WTP (see *Figure 2-2*) mainly include:

- East – Agricultural land (mainly rubber tree plantation);
- South – Agricultural land and the Da Thanh Animal Feed Production Company Ltd;
- West – Public Road No. 85 and then Binh Duong Industrial, Service and Urban Complex; and
- North – Public Road DX32 and agricultural land (mainly rubber tree plantation).

The WTP, and its surrounding area, are relatively flat. The WTP is enclosed by a brick wall and is accessible through the WTP’s main entrance along the western boundary via Road No. 85. Whilst no known protected areas or ecologically significant/sensitive areas are identified within 1 km from the WTP¹, some residential households are known to be present within close proximity to the perimeter of the WTP, i.e. within 300 m to the west and east of boundary of the WTP.

From the land use and land use right acquisition perspective, Tan Hiep WTP was initially established in 2008 in an area historically and mainly used as agricultural land and no residences were identified. Historically, the first phase of land use right acquisition for the construction of Tan Hiep WTP was

¹ According the land use map of Binh Duong Province (<http://atlas.binhduong.gov.vn/MAP/BDT/Atlas/index.php>), no conservation and protected areas or natural forest were identified within the Province. According to Binh Duong Department of Cultural, Sport and Tourism, there are 13 national cultural and historical areas within Binh Duong Province, in which only one area “Cu Lao Rua” is in Tan Uyen Town, and it is approximately 15 km southwest from the Intake Station.

implemented and completed in 2005/2007 covering three land plots with a total land area of 76,159 m² and one land plot for the construction of the Intake Station with a total land area of 15,612 m². BIWASE currently holds four land use right certificates (LURCs) as listed in the table below (*Table 2-2*).



Figure 2-2 Aerial Imagery of Tan Hiep Water Treatment Plant and its surrounding area as of February 2018

NO.	PROJECT COMPONENT	AREA (M ²)	REMARKS
1	Tan Hiep WTP	64,203	This represents the original footprint of Tan Hiep WTP, in which Phase 1 expansion is situated. BIWASE was granted the LURC ³ on 2 nd October 2017, which will expire on 7 th January 2058.
2	Tan Hiep WTP	11,656	BIWASE was granted the LURC on 12 th October 2017 which is valid until 12 th December 2057.
3	Tan Hiep WTP	300	BIWASE was granted the LURC on 2 nd October 2017 which will expire on 12 th December 2057.
4	Water Intake Pumping Station	15,612	BIWASE was granted the LURC on 28 th July 2008, which will expire on 28 th July 2058.

³ This LUCR was first granted to BIWASE in 2010. Due to change of BIWASE's entity name in 2016, a new LURC was re-issued to BIWASE under its new entity name in 2017.

Total land area	91,771
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In order to implement the Phase 2 expansion works of the WTP, Binh Duong PPC issued *Decision No.61/UBND-KTN* dated on 12th January 2015 with regards to the land recovery of 45,139.7 m², which was later reduced to an area of 43,531.8 m² as per *Decision No. 4181/QĐ-UBND*, dated 22nd August, 2019. The additional area of 43,531.8 m² was classified as productive (agricultural) land, except for an area of 1,674.2 m² previously used as “transportation land” under the management of the Government. Therefore, the total land area of the WTP as a whole currently is 119,690.8 m² (excluding the Intake Station). It is noteworthy to mention that, according to information collected during the site visit, the majority of the 43,531.8 m² land area was formerly used as rubber tree plantations. The land acquisition process for the Phase 2 expansion was initiated in 2017/2018 and completed in 2018/2019. Currently, BIWASE is coordinating with local authorities to process and obtain the LURC for this land.

The locations of the Phase 1 and Phase 2 expansion works at the WTP are shown in **Figure 2-9** below. At the time of this report preparation, IBIS understands that the construction work associated with the Phase 1 expansion works of the WTP is in progress (*see Annex D Photolog*) and is expected to be completed at the end of 2020, whilst land clearance and preparation in the southern portion of the WTP under the Phase 2 expansion works have been completed. However, construction of the Phase 2 expansion is still in the planning stages, and no confirmed implementation timeline was provided.

According to a review of historical aerial imagery and information collected during the site visit, the WTP area was historically and mainly used as agriculture including vegetable growing, peanuts, and some fruit trees, such as rambutan and jackfruit trees (**Figure 2-3**). No residential homes were identified as being located within the area. Water treatment operations were first established in the northern portion of the WTP as shown in **Figure 2-4 to Figure 2-7**. Based on the photographs of the WTP taken during the site visit and information provided by BIWASE, the vegetated area in the recently acquired land area in the southern portion of the WTP has since been cleared for the Phase 2 expansion works.

It is noteworthy to mention that, according to the layout of the WTP (**Figure 2-8**) and information provided by BIWASE, the WTP currently has one existing chlorine gas storage facility (with an approximate footprint of 70 m²) situated roughly at the centre of the WTP. For the Phase 1 expansion works, an additional chlorine gas storage house, of a similar design, with a footprint of 70 m² would be built by converting an existing building immediately adjacent to the existing chlorine storage house. One additional chlorine gas storage facility has been tentatively planned initially along the southern perimeter of the WTP under the future Phase 2 expansion. BIWASE indicated that the exact location of this additional chlorine storage facility under Phase 2 had yet been confirmed and would likely be relocated. Please see below for further discussion on Hazardous Material Management and

Community Health and Safety in relation to chlorine gas storage and use at the WTP (and the Intake Station).



Figure 2-3 Aerial Imagery of Tan Hiep Water Treatment Plant in December 2003



Figure 2-4 Aerial Imagery of Tan Hiep Water Treatment Plant in December 2010



Figure 2-5 Aerial Imagery of Tan Hiep Water Treatment Plant in February 2015



Figure 2-6 Aerial Imagery of Tan Hiep Water Treatment Plant in January 2017



Figure 2-7 Aerial Imagery of Tan Hiep Water Treatment Plant in February 2018

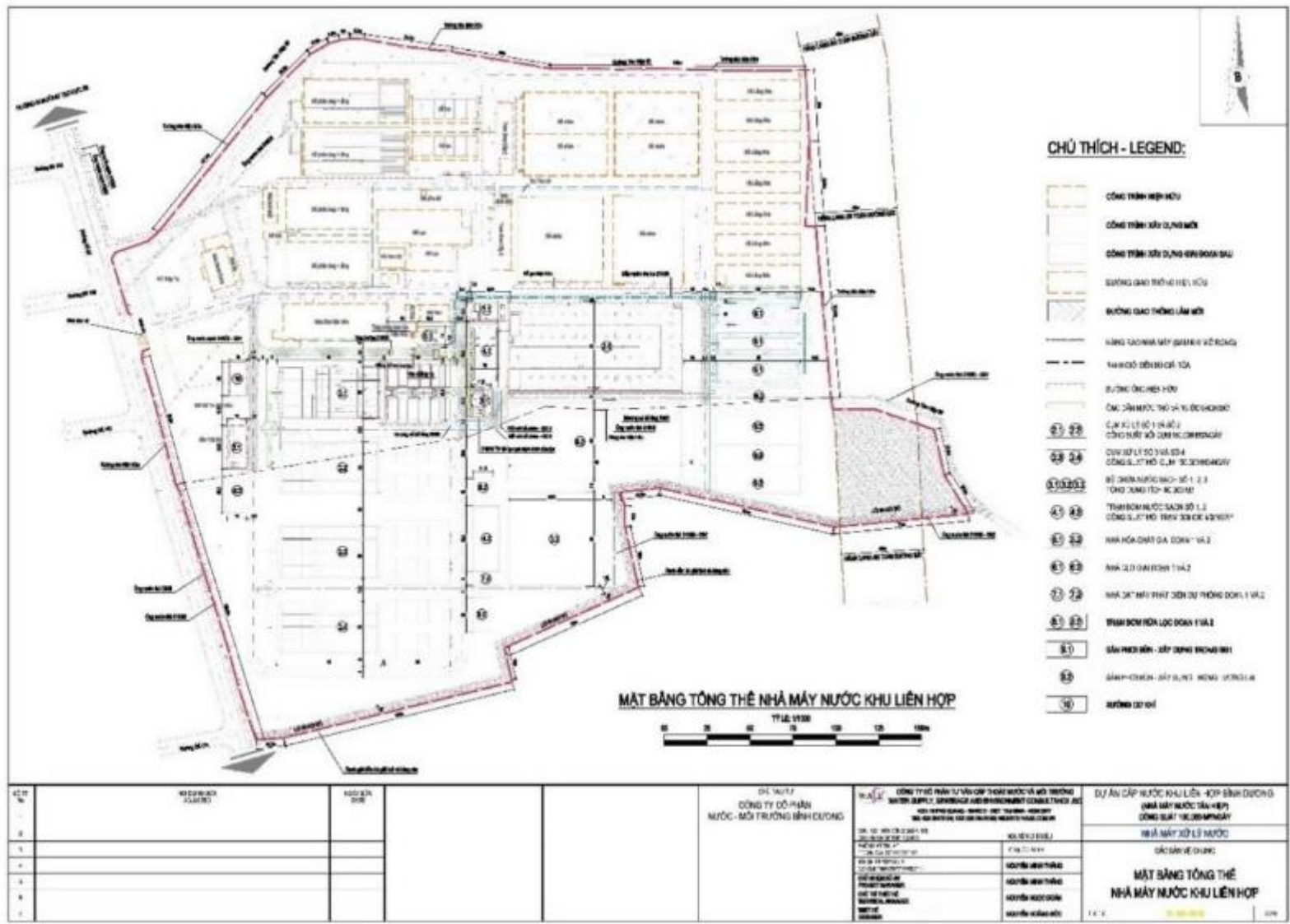


Figure 2-8 Layout of the WTP Including Phase 1 and Phase 2 Expansions (the Boundary of the WTP is Outlined in Red)

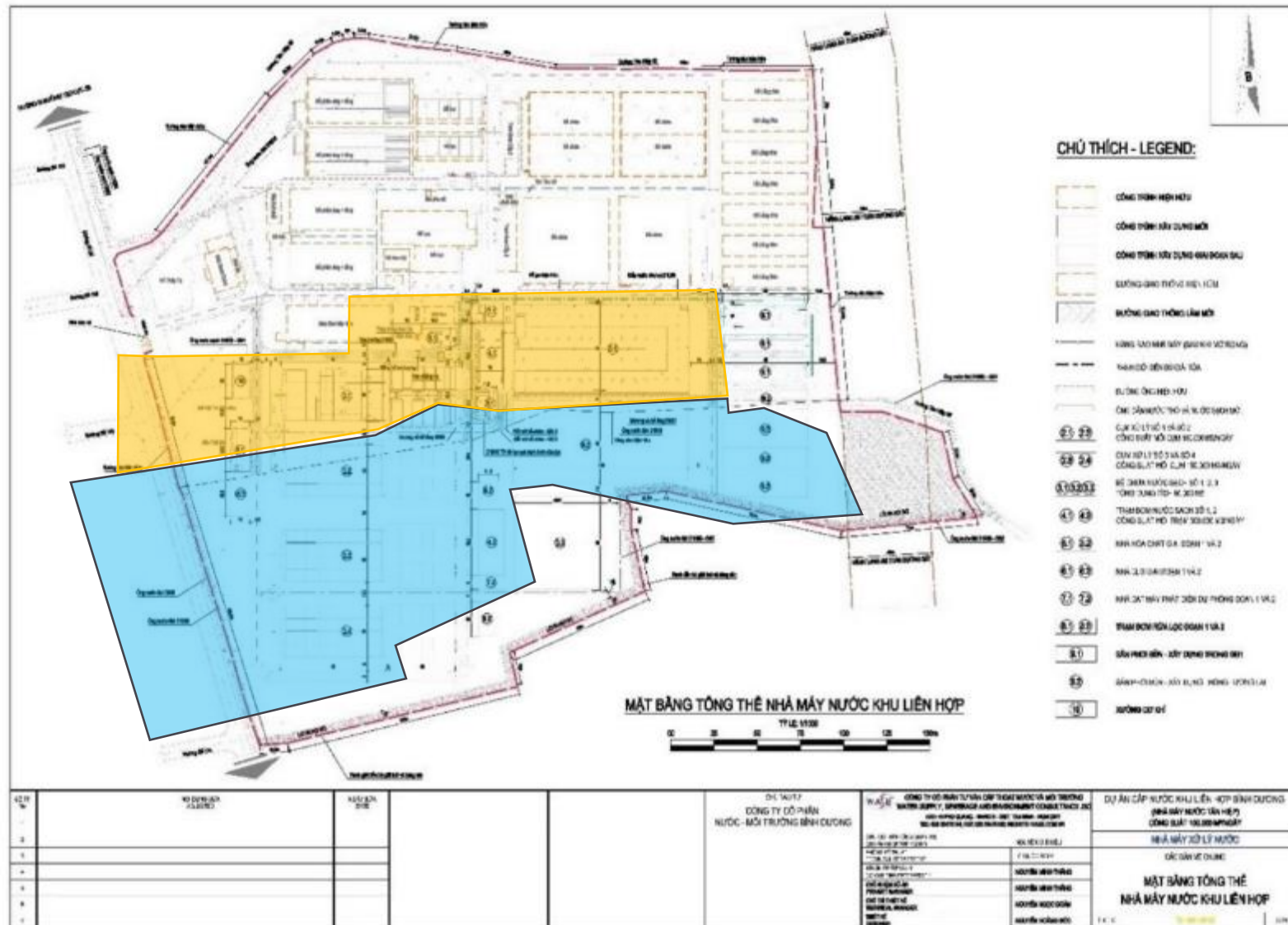


Figure 2-9 Phase 2 Expansion Shaded in Blue and Phase 1 Expansion (Planned ADB Investment) Shaded in Orange

2.2.2 The additional raw water intake facility and equipment

Covering a total land area of 15,612 m², the Intake Station is located along the Dong Nai River approximately 7 km southeast of the WTP. The new raw water intake works of the Project are located immediately northeast of the existing raw water intake works on the existing land of the Intake Station. As identified in **Table 2-2**, the LURC for this land was issued on 28th July 2008 and will expire on 28th July 2058. Under the management of Tan Hiep WTP and BIWASE, the Intake Station abstracts raw water from the Dong Nai River and transfers it to the WTP for treatment. A total of 10 employees are present at the Intake Station which operates 24 hours a day, 7 days a week.

The original raw water intake works were constructed in 2008 in the south western portion of the Intake Station (**Figure 2-13 and Figure 2-14**). The layout of the Intake Station post-expansion is shown in **Figure 2-10**. The expansion works of the Intake Station in the north eastern portion include a sand drying yard, a chlorine storage house, a generator house, a raw water intake and pumping station and related water collection transfer works. The Intake Station is enclosed by a brick wall with a guard house. It is accessible via an entrance at its north-eastern corner and is connected to Provincial Road 747 via a 300m long existing concrete roadway. At the time of the site visit in May 2020, construction of the new raw water intake works, including landscaping and road surfaces, for the Project had been completed (see **Annex D Photolog**).

Based on a review of an aerial imagery dated February 2018 (**Figure 2-11**), agricultural areas were identified to the north and west of the Intake Station. The Dong Nai River sits immediately east of the Intake Station. Immediately southwest of the Intake Station is a local private construction material (sand) company named Khanh Binh Sand Storage Yard (Khanh Binh). According to information collected during the site visit, Khanh Binh was established prior to the construction of the original Intake Station, and Khanh Binh's activities are not expected to impact the operations of the Intake Station, as its sand is recovered from other locations away from the Intake Station. Khanh Binh uses its location mainly for temporary storage before transporting the sand to its customers. As a precautionary measure, a float device serving as a barrier is placed in front of the raw water inlet to prevent rubbish or oil leakage, if any, from sand transport barges and other motorised vessels from entering the area of the raw water intake works.



Figure 2-10 The Layout of the Intake Station Post-Project Expansion (the Project Expansion is Shaded in Green)



Figure 2-11 The Intake Station (Outlined in Red) along the Dong Nai River in February 2018



Figure 2-12 Historical Aerial Imagery of the Intake Station Dated in December 2003



Figure 2-13 Historical Aerial Imagery of the Intake Station in December 2010



Figure 2-14 Historical Aerial Imagery of the Raw Water Intake Station in March 2014

2.2.3 The installation of raw water transmission pipelines

The layout of the additional raw water pipeline is shown in **Figure 2-15**. The 9 km long raw water transmission pipeline alignment is along existing public roads, namely Provincial Road 746, Nguyen Van Linh Street, and an internal road in Binh Duong Industrial, Service and Urban Complex, named Road No.85. The three roads pass through residential areas and Nam Tan Uyen Industrial Park⁴. Based on observations made during the site visit in May 2020, the installation of the raw water transmission pipelines has been completed along the RoW. Selected photographs of the raw water transmission pipelines along the RoW are presented in **Annex D Photolog**.

According to the June 2020 EIA, the table (**Table 2-3**) below summarises the key components of the existing WTP and those of the expansion Project.

⁴ Nam Tan Uyen Industrial Park (<http://www.namtanuyen.com.vn/>)

Table 2-3 Comparison between the Existing WTP and the Expansion Project*

NO.	MAJOR COMPONENTS	EXISTING WORK	UPGRADED CAPACITY
<i>I</i>	<i>Raw water pumping station</i>		
1	Water inlet pipe	1	1
2	Water intake tunnel	1	1
3	Raw water pumping station #1	1	1
4	Centrifugal pumps	12 sets	3 sets
<i>II</i>	<i>Water treatment plant</i>		
1	Mixing tanks	4	1
2	Reaction tanks	12	3
3	Sedimentation tanks	12	3
4	Filtration tanks	21	6
5	Reservoirs	4	1
<i>III</i>	<i>Chemical storage + Chlorine house</i>		
1	Chlorination part		
	Chlorinator (0-4 kg/h)	4	1
	Chlorine cylinder	4	1
	Bench scale (0-200kg)	1	
2	Lime slurry mixing (shared use)		
	Centrifugal pump	2	
	Dosing pumps	2	
	Agitators	2	
3	PAC injection (shared use)		
	Dosing pump	2	
	Agitator	2	
<i>IV</i>	<i>Secondary pumping station</i>		
1	Centrifugal pump with capacity upgraded phase by phase (500 m3/h, 700 m3/h, 1.100 m3/h, 3.000 m3/h)	13	3
<i>V</i>	<i>Administration house (shared use)</i>		

* Information extracted from the June 2020 EIA.

2.2.4 Dong Nai River

Raw water supplied to Tan Hiep WTP is abstracted from the Dong Nai River. The Dong Nai River is classified as Category "A1" under the definitions in *Water Sources for Water supply, Aquatic Flora and Fauna Conservation, Irrigation Purposes by QCVN08-MT:2015/BTNMT*. According to the June

2020 EIA, the current water abstraction rate of Tan Hiep WTP from the Dong Nai River is 1.4 cubic metres per second (m³/s), which was also confirmed by BIWASE during the site visit. When the Phase 1 expansion under the Project is completed, the WTP's raw water extraction rate will increase to 2.54 m³/s in total.

The June 2020 EIA indicated that the average flow rate of the Dong Nai River in the dry season was approximately 124 m³/s, and the flow in the driest month was reported to be as low as 9 m³/s. According to a procedure of inter-reservoir operation in the Dong Nai River basin issued together with *Decision No.471/QD-TT* dated 24th March 2016, Tri An Reservoir would discharge to the river at a flow rate of 120 to 130 m³/s during the dry season. As such, the June 2020 EIA reported that no material effects would be caused to the river flow regime and the water level of the Dong Nai River as a result of the increase in the raw water intake rate by the WTP.

During the site visit in May 2020, an interview was held with a representative of DoNRE regarding the health of the Dong Nai River. According to DoNRE, based on *Thematic III – Evolution of Surface Water Quantity under the Report: Investigating, Surveying and Assessing the Present State of Surface Water Sources, Proposing Solutions to Surface Water Resource Management in Binh Duong Province*, conducted by Southern Institute of Water Resources Research in 2014, from the period between 1990 and 2012 (i.e. after the operation of Tri An Reservoir started), the flow rate of the Dong Nai River ranged from 203.2 to 427.5 m³/s during the dry season (typically from December to June) and from 548.8 to 999.3 m³/s during the rainy season (typically from July to November). The average flow rate of the Dong Nai River during the study period between 1990 and 2012 was reported at 234 m³/s.

According to the report on Exploitation and Using Surface Water of Tan Hiep WTP prepared and updated by BIWASE in August 2019 and submitted to Ministry of Natural Resources and Environment (MoNRE) for the surface water exploitation application, the flow rate of the Dong Nai River at the Intake Station during the period between 1990 and 2018 varied from 39 – 199 m³/s during the dry season and from 60 - 840 m³/s during the rainy season. In 2011, a flow rate of 78-130 m³/s and 194 to 469 m³/s were measured during the dry and rainy seasons, respectively, with the minimum flow rate measured at 39 m³/s. According to the representative of DoNRE, quantity and quality of surface water from the Dong Nai River was considered stable and adequate for use by the Project.

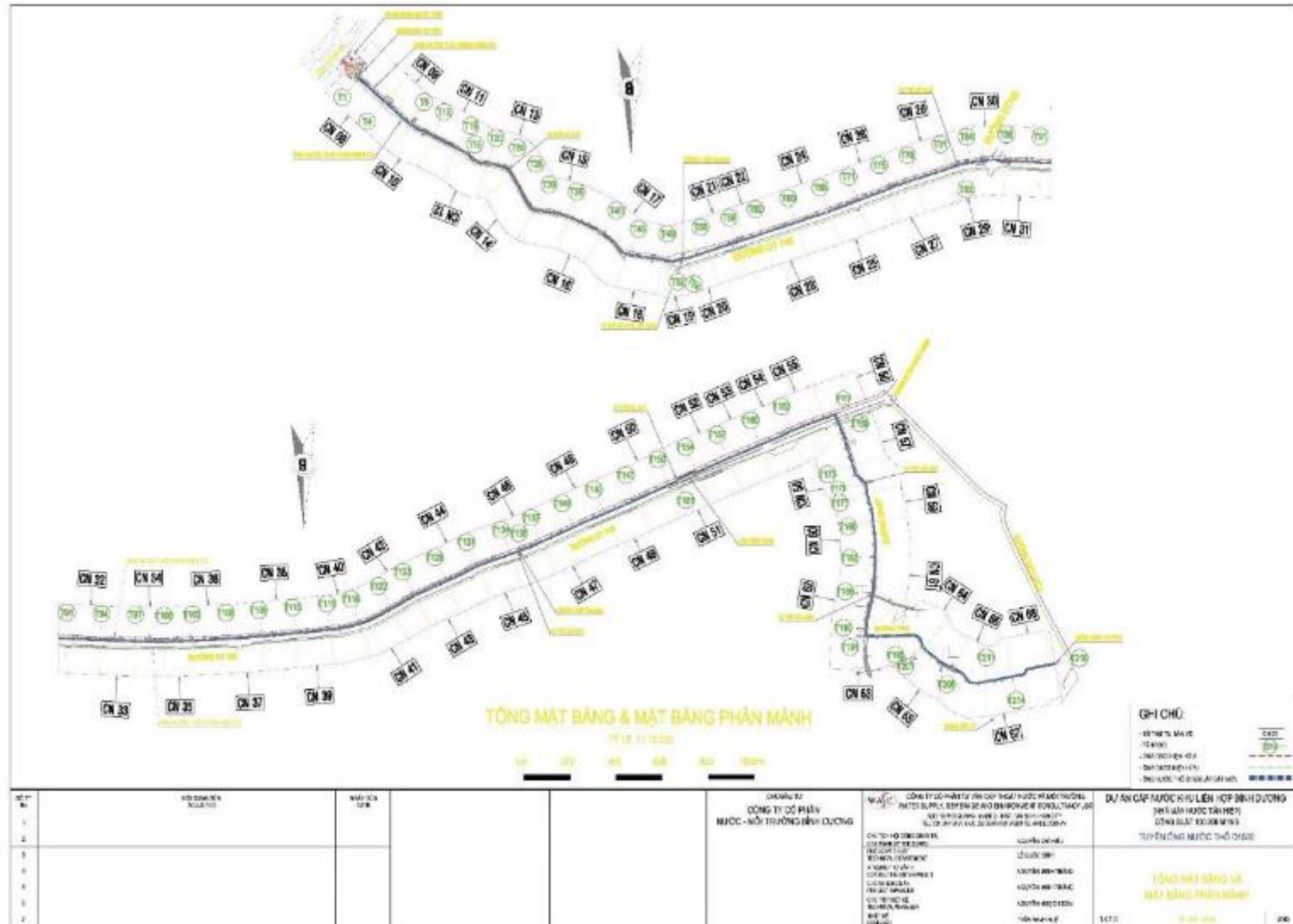


Figure 2-15 Layout of the Additional Raw Water Transmission Pipelines

3 SCOPE OF WORK

3.1 OBJECTIVES

The objectives of the Audit were to independently review and assess the E&S status and performance of the Project, as well as to identify compliance gaps, issues, improvement opportunities, and develop a detailed time-bound Corrective Action Plan (CAP) to support alignment with the Applicable Standards, as detailed below. The output of the Audit includes:

- This Environmental and Social Compliance Audit Report (ESCAR); and
- Corresponding corrective action measures, in the form of a CAP to address the key risks/issues identified during the Audit.

3.2 APPLICABLE STANDARDS

The Audit was conducted against the following standards, collectively as “**Applicable Standards**”:

- ADB Safeguard Policy Statement (SPS) (2009);
- Applicable World Bank Group (WBG) Environmental, Health & Safety (EHS) Guidelines, including General EHS Guidelines (2007) and EHS Guidelines for Water and Sanitation (2007);
- ADB’s 2001 Social Protection Strategy, 1998 Gender and Development Policy, 2018 Access to Information Policy,
- Applicable international standards, including International Labour Organisation (ILO) conventions ratified by Viet Nam at the time of proposal authorisation, covering core labour standards (such as ILO conventions 29, 98, 100, 111, 138 and 182) and all ILO conventions covering the basic terms and conditions of employment (such as ILO conventions 120, 123, 124, 155 and 187); and
- Applicable local, national and international E&S laws, regulations and standards fully in force in Viet Nam at the time of Proposal authorisation (including international conventions fully ratified), which are further detailed below.

It should be noted that the Audit focused on identifying those issues that are most significant for the potential transaction in relation to the Applicable Standards. Applicable Vietnamese laws and regulations

This section presents the key relevant and applicable laws and regulations in Viet Nam for the Project.

Environment

1. **National Level:** Legal framework of the Government of Viet Nam: Law, decrees, and circular of the Government of Viet Nam on environment include:

- i) *Law on Environmental Protection No. 55/2014/QH13 passed by the 13th National Assembly of the Socialist Republic of Viet Nam on 23rd June 2014 and effective from 1st January 2015;*
- ii) *Law on Water Resources No. 17/2012/QH13 passed by the 13th National Assembly of Viet Nam, 3rd session dated 21st June 2012;*
- iii) *Law on Biodiversity No. 20/2008/QH12 passed by the 12th National Assembly of the Socialist Republic of Viet Nam dated 13th November 2008;*
- iv) *Decree No. 18/2015/ND-CP dated 14th February, 2015 of the Government on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental management plan;*
- v) *Decree No. 40/2019/ND-CP dated 13th May 2019 of the Government on amendments to decrees on guidelines for the law on environment protection;*
- vi) *Decree No. 19/2015/ND-CP dated 14th February 2015 of the Prime Minister detailing the implementation of a number of articles of the Law on Environmental Protection;*
- vii) *Decree No. 201/2013/ND-CP dated 27th November 2013 of the Government detailing implementation of a number of articles of the Law on Water Resources;*
- viii) *Decree No. 38/2015/ND-CP dated 24th April 2015 of the Government on management of waste and discarded materials.*
- ix) *Decree No. 80/2014/ND-CP dated 6th August 2014 of the Government on wastewater drainage and treatment;*
- x) *Circular No. 27/2015/TT-BTNMT dated 29th May 2015 of MONRE on strategic environmental assessment, environmental impact assessment and environmental protection plans;*
- xi) *Circular No. 25/2019/TT-BTNMT dated 31st December 2019 of MONRE on elaborating some articles of the Government's Decree No. 40/2019/ND-CP dated 13th May 2019 on amendments to decrees on guidelines for the Law on Environmental protection and providing for management of environmental monitoring services*
- xii) *Circular No. 36/2015/TT-BTNMT dated 30th June 2015 of MONRE on management of hazardous wastes; and*
- xiii) *Circular No. 32/2013/TT-BTNMT dated 25th October 2013 of MONRE on promulgation of national technical regulations on environment.*

Labour, Health and Safety

National Level: Legal framework of the Government of Viet Nam: Law, decrees, and circular of the Government of Viet Nam on Health and Safety include:

- i) *Law on amendment and supplement of a number of articles of Law on Fire Prevention and Fighting No.40/2013/QH13 passed by the 13th National Assembly of the Socialist Republic of Viet Nam dated 22nd November 2013.*
- ii) *Law on Occupational Safety and Health No. 84/2015/QH13 issued on 25th June 2015;*
- iii) *Circular No. 19/2016/TT – BYT dated 30th June 2016 of MOH on guidelines for occupational health and safety management;*
- iv) *Circular No. 22/2010/TT-BXD dated 3rd December 2010 of MOC on labour safety in work construction;*
- v) *Labour Code (10/2012/QH13);*

- vi) Decree No. 85/2015/ND-CP of the Prime Minister of Viet Nam dated on 1st October 2015 regarding detailed regulations of articles of Labour law on policies for female employees.
- vii) Decree No. 141/2017/ND-CP prescribing the regional minimum wage rates for employees working under employment contracts.
- viii) Decree No. 53/2016/ND-CP regulations on management of employees, salaries, remuneration and bonuses of joint-stock Companies.
- ix) Decree No. 39/2016/ND-CP detailing the implementation of some articles of the Law on Occupational Safety and Health.
- x) Decree 85/2015 / ND-CP stipulating in detail a number of articles of the Labour Code on the labour policy for women.
- xi) Decree No. 05/2015/ND-CP detailing and guiding a number of provisions of the Labour Code.
- xii) Decree No. 103/2014/ND-CP stipulating the minimum wage for employees working in enterprises, cooperatives, cooperative groups, farms, households, individuals, agencies and organisations that hire workers.
- xiii) Circular No. 04/2014/TTBLDTBXH containing Guidelines to implement measures for the wearing of personal protective equipment.
- xiv) Decree No. 03/2014/ND-CP detailing a number of articles of the Labour Code on employment.
- xv) Circular No. 27/2013/TTBLDTBXH regulating occupational health and safety training.
- xvi) Circular No. 25/2013/TT-BLDTBXH Guiding the implementation of the regime of allowances to employees working in dangerous and hazardous conditions.
- xvii) Circular No. 26/2013/TT-BLDTBXH promulgating the categories of jobs in which women are not to be employed.
- xviii) Circular No. 11/2013/TT-BLDTBXH promulgating the list of light tasks permitted for persons under 15 years old.
- xix) Circular No. 08/2013/TT-BLDTBXH of 10 June 2013, guiding the Government's Decree No. 46/2013/ND-CP of May 10, 2013, detailing a number of articles of the Labour Code regarding labour disputes.
- xx) Circular No. 10/2013/TT-BLDTBXH promulgating the list of jobs and workplaces prohibited to young workers.
- xxi) Decree No. 49/2013/ND-CP of May 10, 2013, detailing a number of articles of the Labour Code regarding wages.
- xxii) Decree No. 45/2013/ND-CP of May 10, 2013, detailing a number of articles of the Labour Code on working time, rest time and occupational safety and health.
- xxiii) Decree No. 46/2013/ND-CP of May 10, 2013, detailing a number of articles of the Labour Code regarding labour disputes.
- xxiv) Decree No. 44/2013/ND-CP of May 10, 2013, detailing a number of articles of the Labour Code regarding labour contracts.
- xxv) Decree No. 41/2013/ND-CP of May 8, 2013, detailing the implementation of the Labour Code's Article 220 on the list of employing units in which strikes are prohibited and settlement of demands of employees' collectives in these units.
- xxvi) Circular No. 14/2013/TT-BYT guiding medical examinations.

Key national technical regulations (QCVN) relevant and applicable to the Project of Tan Hiep WTP expansion are listed in the following table:

Table 3-1 Key National Technical Regulations relevant to the Project

NO.	QCVN	DETAILS
<i>I. QCVN with Respect to Air</i>		
1.	QCVN 05:2013/BTNMT	National technical regulations on ambient air quality
2.	QCVN 06:2009/BTNMT	National technical regulations on some hazardous substance in ambient air
3.	QCVN 19:2009/BTNMT	National Technical Regulation on industrial emissions of dust and other inorganic pollutants
<i>II. QCVN with Respect to Water</i>		
4.	QCVN 01:2009/ BYT	National technical regulations on drinking water quality
5.	QCVN 08 MT:2015/BTNMT	National technical regulations on surface water quality
6.	QCVN 09:2015/BTNMT	National technical regulations on ground water quality
7.	QCVN 14:2008/BTNMT	National technical regulations on domestic water
8.	QCVN 40:2011/BTNMT	National technical regulations on industrial wastewater
<i>III. QCVN with Respect to Noise and Vibration</i>		
9.	QCVN 26:2010/BTNMT	National technical regulations on noise in public and residential areas
10.	QCVN 27:2010/BTNMT	National technical regulations on vibration in public and residential areas
<i>IV. QCVN with Respect to Solid Waste</i>		
11.	QCVN 07:2009/BTNMT	National technical regulations on thresholds for hazardous waste
12.	TCVN 6707:2009/BTNMT	Hazardous waste: Signs of warning and prevention
13.	TCVN 6705:2009/BTNMT	Ordinary solid waste
14.	TCVN 6706:2009/BTNMT	Classification of hazardous waste
<i>V. QCVN with Respect to Sludge</i>		
15.	QCVN 50:2013/BTNMT	National technical regulations on hazardous thresholds for sludge produced during water treatment process

16.	QCVN 43:2012/BTNMT	National technical regulations on sediment quality
<i>VI. National Technical Regulations on Heavy Metals in Soil</i>		
17.	QCVN 03:2015/BTNMT	National technical regulations on allowable limits for some heavy metals in soil
<i>VIII. Regulations issued by Ministry of Health on Labour Hygiene</i>		
18.	Decision no. 3733/2002/QĐ-BYT	On the issuance of 21 labour hygiene standards, 5 principles and 7 labour hygiene measurements
<i>VIII. Other Applicable Technical Regulations/Standards</i>		
19.	QCVN 07:2010/BXD	National technical regulations on urban technical infrastructure
20.	TCXDVN 33:2006	Water supply - Standards for designing pipe networks and treatment facilities
21.	Decree no. 113/2017/NĐ-CP	Detailing and guiding the implementation of some articles in the Law on Chemicals

Land Acquisition, Compensation and Resettlement

The Vietnamese government has enacted a number of laws and regulations that constitute a national legal framework for land acquisition, compensation and resettlement. In addition, the Binh Duong PPC has also issued Decisions that supplement national legislation and address the specificities of the Project.

1. **National Level:** Legal framework of the Government of Viet Nam: Law, decrees, and regulations of the Government of Viet Nam on land acquisition, compensation, resettlement and ethnic minority include:
 - i) *The Constitution of the Socialist Republic of Viet Nam, 2013 (Confirms the right of citizens to own and protects the ownership of house and production materials of citizens; compensation by market rate is made for impacts by the projects implemented for the purposes of national defence, security or public benefits (Article 32). Similarly, organizations and individuals have land use rights certificates and law protects these rights. In the case of land recovery for the purposes of national defence, security and socioeconomic development, compensation shall follow the provisions of law (Article 54);*
 - ii) *Land Law 2013 (No. 45/2013/QH13) dated 29th November 2013;*
 - iii) *Decree No. 16/2016/NĐ-CP dated 16th March 2016 on management and utilisation of Official Development Assistance (ODA) and concessional loans from donors;*
 - iv) *Decree 132/2018/NĐ-CP dated on 1st October 2018 of Government amending and supplementing some articles of Decree 16/2016/NĐ-CP about management and using ODA and preferential loans of sponsors from abroad;*
 - v) *Decree No. 43/2014/NĐ-CP dated 15th May 2014 on detailing a number of articles of the Land Law 2013;*
 - vi) *Decree No. 44/2014/NĐ-CP dated 15th May 2014 on regulations on land prices;*

- vii) *Decree No.47/2014/NĐ-CP* dated 15th May 2014 on compensation, assistance, and resettlement upon land recovery by the State;
 - viii) *Decree No.06/2020/ND-CP* dated on 3rd January 2020 on amendments to Article 17 of *Decree No. 47/2014/ND-CP* providing for compensation, support and resettlement when the State recovers land;
 - ix) *Decree No. 01/2017/ND-CP* dated on 6th January 2017 adjusting some articles of the *Decree No. 43/2014/ND-CP* on the implementation of certain articles of *the Land Law, Decree No. 44/2014/ND-CP* on land price, and *Decree No. 47/2014/ND-CP* on compensation, support and resettlement for the government's expropriation of land;
 - x) *Circular No. 36/2014/TT-BTNMT* on land pricing method;
 - xi) *Circular No.37/2014/TT-BTNMT* on guidelines in implementation of *Decree No.47/2014/NĐ-CP*;
 - xii) *Decision No.775/QĐ-Tf-GM* dated 20th May 2013 on policy on supporting housing land, agricultural land, clean water to poor ethnic households and needy ones in the disadvantaged communes; and
 - xiii) *Decree No. 75/2015/NĐ-CP* dated 9th September 2015 on mechanism and policies on forest protection and development in combination with sustainable and fast poverty alleviation and support for ethnic groups during 2015 – 2010.
- 2. Province Level (Binh Duong PPC):** Binh Duong PPC has promulgated the Decisions for compensation, assistance and resettlement policy when land is acquired by the State in Binh Duong Province as follows:
- i) *Decision No.51/2014/QĐ-UBND* dated on 18th December 2014 on promulgating compensation, assistance and resettlement policy when land is acquired by the State in Binh Duong Province;
 - ii) *Decision No.04/2017/QĐ-UBND* dated on 17th February 2017 on adjusting the price unit for types of land in the territory of Binh Duong Province;
 - iii) *Decision No.25/QĐ-UBND* dated on 22th July 2015 on promulgating price unit for compensation and assistances for affected assets on land in the territory of Binh Duong Province;
 - iv) *Decision 03/2018/QĐ-UBND* dated 9th February 2018 on amending and supplementary some articles of *Decision No. 25/2015* dated on 22th July 2015 on promulgating price unit for compensation and assistances for affected assets on land in the territory of Binh Duong Province.; and
 - v) *Decision No.258/QĐ-UBND* dated on 25th January 2018 on approving the compensation price unit for affected land to implement the project “Expansion of Tan Hiep water treatment plant” in Tan Hiep ward, Tan Uyen town.

Ethnic Minority Affairs

With regard to *Ethnic Minorities (EMs) Viet Nam's Constitution (2013)* mandates the State to “implement a policy on equality, unity and support for all ethnic groups in the development of a civilized society, and respect benefits, traditional cultures, languages and religions of ethnic minority groups (Article 5). A ministerial-level government body, Committee for Ethnic Minority Affairs is tasked for developing and overseeing policies and programs to promote the welfare of EMs. Programs that target EMs are numerous and diverse and cover a wide range of issues, including poverty reduction, resettlement and settled agriculture, productive and residential land allocation, education, health and communication, cash subsidies on land reclamation, improvement of commune

and village infrastructure, etc. Key regulations involving Ems in Viet Nam are presented below in a chronological order.

- i) *Decision No. 1898 / QD-TTg dated 28th November 2017 of the Prime Minister approving project of "Supporting Gender Equality in Ethnic Minorities in the Period 2018-2025"*
- ii) *Decision No. 1163 / QD-TTg dated 8th August 2017 of the Prime Minister approving the project "Promote law dissemination and education and propagandise in ethnic minority and regional areas mountain period 2017-2020"*
- iii) *Decision No. 414 / QD-UBDT dated 11th July 2017 of the National Committee for Ethnic Minority Affairs approving the list of extremely difficult villages to be invested in Program 135 period 2017-2020*
- iv) *Decision No. 2085 / QD-TTg dated 31st October 2016 of the Prime Minister approving the specific policy on support for socio-economic development of ethnic minority and mountainous areas in the period of 2017-2020*
- v) *Decision No. 1008 / QD-TTg dated 2nd June 2016 of the Prime Minister approving the Scheme on Strengthening Vietnamese Language Preparation for Preschool Children and Elementary School Children in ethnic minority area in period 2016-2020, orientation to 2025*
- vi) *Decision No. 1747 / QD-TTg dated 13th October 2015 of the Prime Minister approving the program of supporting the transfer of scientific and technological advances to promote the socio-economic development of rural mountainous areas of ethnic minority Period 2016-2025*
- vii) *Decision No. 2356 / QD-TTg, dated 4th December 2013 of the Prime Minister promulgating the Action Program for implementation of the ethnic minority strategy up to 2020*
- viii) *Decision No. 449 / QĐ-TTg dated 12th March 2013 of the Prime Minister approving the strategy for ethnic minority to 2020*
- ix) *Decree No. 80/2011/NQ-CP on sustainable poverty reduction, period of 2011-2020*
- x) *Decree No. 05/2011/NĐ-CP on the work of ethnic minority.*
- xi) *Decree No. 82/2010/ND-CP, dated 20th July 2010 on teaching and learning of ethnic minority languages in schools.*
- xii) *Resolution No. 30a/2008/NQ-CP, dated 27th December 2008 on support program for rapid and sustainable poverty reduction for 61 poorest districts*
- xiii) *Decree No. 60/2008/NĐ-CP dated 9th May 2008 of the government on the functions, tasks, authorities and structure of the Committee for Ethnic Minorities and Mountainous Areas Affairs.*
- xiv) *Decision no. 112/2007/QD-TTg of the Prime Minister dated 5th March 2007 on the policy of assistance for relocation and agriculture for Ethnic Minorities from 2007 to 2010.*
- xv) *Decision no. 33/2007/QD-TTg of the Prime Minister dated 20th July 2007 on the policy of assistance to improve knowledge of laws as a program of 135, phase 2.*
- xvi) *Decision no. 01/2007/QD-UBDT dated 31st May 2007 of the Ethnic Minorities Committee on the recognition of communes, districts in the mountainous areas*
- xvii) *Decision no. 05/2007/QD-UBDT dated 6th September 2007 of the Ethnic Minorities Committee on its acceptance for three regions of ethnic minorities and mountainous areas based on development status*
- xviii) *Circular no. 06 dated 20th September 2007 of the Ethnic Minorities Committee guidance on the assistance for services, improved livelihood of people, technical assistance for improving the knowledge on the laws according Decision 112/2007/QD-TTg*

- xix) *Decision no. 06/2007/QD-UBDT dated 12th January 2007 of the Ethnic Minorities Committee on the strategy of media for the program 135-phase 2*
- xx) *Decree no. 59/1998/ND-CP dated 18th July 1998 prescribing lump-sum allowance regime applicable to relatives of people with meritorious services to the revolution who had died before 1st January, 1995*
- xxi) *Decree no. 51/2003/ND-CP, amending and supplementing a number of articles of Decree no. 87ND-CP of 19th December, 1996 detailing the assignment of responsibilities for managing, drafting, implementing and settling the state budget*

With regards to the regulatory process of developing and implementing an EIA in Viet Nam, below briefly describes the key steps involved:

- Step 1: Construction projects are screened to identify which requirement of environmental assessment is applied based on Annex II of Decree 40/2019/ND-CP on amendments to decrees on guidelines for the law on environment protection.
- Step 2: Depending on the nature and scale of the project, the project owner may be required to prepare an EIA to submit to MoNRE/PPC or an Environment Protection Plan to District People Committee for review and approval/clearance.
- Step 3: Organisation of an appraisal board to review the EIA within a maximum of 45 days from the day of receipt of the EIA in the case of EIA submission to MoNRE and 30 days in case of EIA submission to PPC.
- Step 4: In case of the EIA being cleared by the appraisal board without any requirement of further adjustments, the appraisal agencies have the responsibility to inform the project owner on the EIA approval within 5 days from the appraisal day. In the case where the EIA report is required to be amended and supplemented, within 12 months from the date of receipt of the notice of the appraisal result, the project owner must amend and complete the EIA report according to the comments from the appraisal result and submit it to the appraisal agency for further review and approval of the EIA report.
- Step 5: After receiving the revised EIA report sent by the project owner, the appraisal agency shall:
 - a) Within 20 working days after receiving the revised EIA report, the appraisal agency shall issue a decision approving the EIA report.
 - b) In case of ineligibility for approval or non-approval, within 10 working days after receiving the revised report, the appraisal agency must send a written letter clearly stating the reasons of the non-approval to the project owner.

3.3 SCOPE

The focus of the Audit has been on understanding any significant E&S issues in relation to the Project (commensurate with its nature and scale) and any E&S issues that may present a concern to ADB in terms of notable non-compliance against the Applicable Standards or a potential significant E&S-related reputational risk (as far as can be reasonably foreseen). Key relevant national laws and regulations in Viet Nam relating to environment, health & safety (H&S), land acquisition, relocation of

affected persons, Indigenous Peoples (where applicable), labour and gender issues have been considered.

The Audit was performed using the following steps that have been grouped into the key tasks set out below and detailed in the following section.

3.4 METHODOLOGY

A staged approach was undertaken for the Audit as detailed below:

3.4.1 Task 1 – Project Initiation and Preparation

A kick-off call was held with the Client, ADB and IBIS on the 2nd April 2020 via teleconference. An Information Request List was provided to the Client. The Client also supported the planning and arrangement of the visit to the Project and provided an initial set of documents for review.

3.4.2 Task 2: Document Review

Under Task 2, a review of available information and publicly available resources was undertaken to assess further the components of the Project. A list of key documents reviewed by IBIS is provided in **Annex A**. These documents included publicly available information collected by IBIS during the Audit and documents provided by BIWASE. Additionally, an External Factors Review is included as **Annex C**.

3.4.3 Task 3: Interviews with BIWASE Management and Selected External Stakeholders

During the process of document review and information collection, management and external stakeholder interviews through multiple Q&A conference calls were held with representatives of BIWASE (and one external stakeholder – Land Fund Development Centre (LFDC)). The table below summarises the interviews held prior to the site visit.

Table 3-2 Teleconference Calls and Interviews Held during the Course of the Audit

DATE	MODE OF COMMUNICATION	KEY TOPICS	PARTICIPANTS
2 nd April 2020	Teleconference call	Kick-off call and general introduction	<ul style="list-style-type: none"> • BIWASE • ADB • IBIS
6 th April 2020	Teleconference call	Document request	<ul style="list-style-type: none"> • BIWASE • ADB • IBIS
9 th April 2020	Teleconference call	Document request clarifications and general Q&A	<ul style="list-style-type: none"> • BIWASE • ADB

DATE	MODE OF COMMUNICATION	KEY TOPICS	PARTICIPANTS
			<ul style="list-style-type: none"> • IBIS
15 th April 2020	Teleconference call	<ul style="list-style-type: none"> • Management interview with BIWASE • Interview with LFDC • General Q&A 	<ul style="list-style-type: none"> • BIWASE • LFDC • ADB • IBIS
13 th May 2020	Teleconference call	Discussion of site visit planning	<ul style="list-style-type: none"> • BIWASE • ADB • IBIS

3.4.4 Task 4: Site Visit

A three-day visit to the Project was conducted by ADB’s national consultants (one National Environment Specialist and one National Involuntary Resettlement and Social Development Specialist, collectively referred to as “the site assessors”) between 18th and 20th May 2020 to further understand the operations of Tan Hiep WTP and its settings. Activities undertaken during the site visit included:

- A brief introductory meeting to understand the historical activities, current operations and known future plans and operations of the Project;
- An accompanied tour of the Project, including tours of the Project sites (i.e. the WTP, the Intake Station and along the water transmission pipelines) and their surroundings by car;
- An accompanied visit to the sludge/waste treatment facility;
- Interviews and discussions with knowledgeable personnel at the Project site;
- Accompanied visits to local community representatives, stakeholders and interviews with members of Affected Households (AHs); and
- A review of documentation made available on-site.

During the site visit, the site assessors were accompanied by personnel from BIWASE. Photographs were taken during the site visit and are presented in **Annex D**. The documents provided for IBIS/site assessor review are listed in **Annex A**. During the site visit, the site assessors interviewed knowledgeable persons largely in the following three groups, and they included:

- Representatives of BIWASE (“Site Representatives”);
- Representatives of LFDC or the District Compensation, Assistance and Resettlement Board (DCARB), and
- Representatives of the local authorities (“Government Authority Representatives”), including commune leaders; and
- Selected members of the AHs (“Interviewed Affected Households” or “IAHs”).

Collectively, they are referred to the “Project Representatives”. Further details of the interviewees are provided in **Annex B**.

3.4.5 Task 5: Reporting

Following the completion of Tasks 1 to 4 above, this report was produced to document the Audit including the findings with recommendations, as appropriate, for additional work to support the Project in aligning with the Applicable Standards in the form of a CAP.

Note that the focus of the Audit has been on assessing those issues that may present the most significant areas for non-compliance or present an obvious potential E&S related reputational risk issue. In order to assist with setting out the context of non-compliances identified, a colour-coded risk ranking has been provided for the findings. The criteria for each of these is provided in the table (**Table 3-3**) below. The risk rankings consider the potential risks and impacts reasonably associated with the components under review.

Table 3-3 Compliance Risk Ranking

DEFINITION	COMPLIANCE RISK LEVEL	
No significant issues identified with respect to alignment with the Applicable Standards, or an item that appears to be not applicable and as such does not have an identified compliance risk.		None identified
Item of non-alignment with the Applicable Standards, however, is unlikely to create a material E&S impact, although should be rectified as a compliance matter.		Low
Item of non-alignment with the Applicable Standards and is required to have additional documentation, improved management measures or allocation of responsibilities to reduce the risk, and if left unaddressed has the potential to escalate to a high risk issue. Item with potentially limited E&S risk/impacts that are few in number, generally site specific, largely reversible and are likely to be able to be managed through mitigation measures.		Medium
Clear significant item of non-alignment with the Applicable Standards that has the potential (or has already) to lead to a significant adverse an E&S impact(s). Has the potential (or has already) to lead to adverse media and/or NGO attention. Has the potential to trigger legal action, may lead to a major environmental incident, or may result in fatalities/serious injuries or have irreversible E&S impacts (e.g. clearance of natural forests). May require significant expenditure (>USD100k) to address the gap and align with the E&S Safeguards.		High

4 ENVIRONMENTAL AND SOCIAL COMPLIANCE REVIEW

4.1 ADB SPS ENVIRONMENT SAFEGUARDS

ADB's Safeguard Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
1 Environmental Assessment					
	Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks. Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety,	<p>Environmental Safeguard, Policy Principles 1, 2 and 3</p> <p>Law on Environmental Protection (55/2014/QH13)</p> <p>Law on Water Resources No. 17/2012/QH13</p> <p>Labor Law No. 10/2012/QH13</p> <p>Law on Biodiversity No. 20/2008/QH12</p> <p>Decree 40/2019/ND-CP guiding the implementation of some articles of the Law on Environmental Protection</p> <p>Decree 19/2015/ND-CP guiding the implementation of some articles of the Law on Environmental</p>	<p>The Project is an expansion of the existing Tan Hiep WTP by an additional water treatment and supply capacity of 100,000 m³/day. Based on <i>Decree 40/2019/ND-CP</i> dated 13th May, 2019, the Project was screened and classified as a project required to prepare an EIA which should then be submitted to Binh Duong DoNRE for review and approval.</p> <p>A draft EIA of the Project was prepared and defended in front of an appraisal broad chaired by Binh Duong DoNRE in September 2019. The draft EIA was then updated according to the comments of the appraisal broad, and the updated EIA was submitted to DoNRE for review. At the time of this report preparation, another updated EIA (herein referred to as the June 2020 EIA) was prepared in June 2020 and was submitted to DoNRE. It was approved on 1st July 2020 (Document No.: 783/QD-STNMT). The June 2020 EIA detailed the development of Tan Hiep WTP since its initial establishment in 2008 and existing water treatment facilities at the WTP.</p> <p>Based on IBIS' review of the June 2020 EIA, the June 2020 EIA included the assessment for potential direct and indirect E&S impact and safety risks from the implementation of the Project during the construction and operational phases for all three of the following components:</p>	High	As a proactive best management practice, BIWASE should continue to monitor its raw water supply from the Dong Nai River in terms of its quality and quantity and conduct a review of its water supply periodically (i.e., every five years) from a long-term water availability perspective.

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	<p>vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate. Examine alternatives to the project's location, design, technology, and components and their potential E&S impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.</p>	<p>Protection. This decree provides some general provisions for soil contamination management</p> <p>Irrigation Law (08/2017/QH14)</p> <p>Decree No. 201/2013/ND-CP dated November 27, 2013 of the Government detailing implementation of a number of articles of the Law on Water Resources;</p> <p>Decree No. 38/2015/ND-CP dated April 24, 2015 of the Government on management of waste and discarded materials.</p> <p>Decree 18/2015/ND-CP on environmental planning, strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Circular 27/2015/TT-BTNMT on strategic environmental</p>	<p>(i) the Intake Station;</p> <p>(ii) the raw water transmission line; and</p> <p>(iii) the additional 100,000 m³/d water treatment and supply capacity at Tan Hiep WTP.</p> <p>The key aspects of adverse E&S impacts and risks identified in the June 2020 EIA are briefly summarised as follows:</p> <p>During the construction phase, key E&S impacts were:</p> <ul style="list-style-type: none"> • Generation of dust and air emissions (CO, CO₂, SO₂, VOC, NO_x, etc) by construction and transportation activities; • Generation of solid wastes including construction and domestic solid waste; • Generation of wastewater by domestic activities, construction-related washing and cleaning activities, and run-off water; • Generation of high noise and vibration by operation of construction equipment; • Risks of social conflict and community safety by the influx of immigrant workers and by transportation activities from the Project; and • Occupational health and safety and traffic accidents by construction and transportation of the Project. <p>During the operational phase (focusing on two of the three components: the raw water intake works and pumping system and the additional capacity at the WTP), key E&S impacts were:</p>		

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		<p>assessment, environmental impact assessment and environmental protection plan</p> <p>Circular No. 25/2019/TT-BTNMT dated December 31, 2019 of MONRE on elaborating some articles of the Government's Decree No. 40/2019/ND-CP dated May 13, 2019 on amendments to decrees on guidelines for the Law on Environmental protection and providing for management of environmental monitoring services</p> <p>Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of MONRE on management of hazardous wastes</p>	<ul style="list-style-type: none"> • Generation and disposal of dewatered sludge; • Generation of domestic wastes, including solid and liquid waste from staff and workers at the WTP; • Generation of hazardous wastewater from the laboratory at the WTP • Electrical problems and other issues in term of repair and maintenance; • Occupational safety, fire and explosion incidents; • Generation of odour from sludge treatment area within the WTP; and • Generation of high noise and vibration during operation of pump houses in the pumping stations and at the WTP. <p>However, the June 2020 EIA was carried out in general guidance with the local regulatory requirements in Viet Nam and did not include cumulative impacts and assess combined effects on the valued E&S components caused by the Project. In addition, the June 2020 EIA did not appear to have considered areas, such as the existing EHS capacity of Tan Hiep WTP, existing provisions for emergency preparedness and response, including community health and safety, and grievance management.</p> <p>One of the potentially significant cumulative effects is sustainable water availability from the Dong Nai River. In the June 2020 EIA, potential impacts of climate change on water availability were not discussed. The risks of flooding and changes of water quality and availability as a result of climate change were also not identified and assessed. Moreover, it also appeared that the potential risks and</p>		

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			<p>impacts associated with storage and use of chlorine gas at the WTP and the Intake Station were also not examined in detail in the June 2020 EIA.</p> <p>Long-term Water Availability</p> <p>BIWASE indicates that the Dong Nai River is currently the sole source of its water supply. Given the increasing demand for water in Viet Nam, there is a need for BIWASE to ensure long-term availability of water supply from the Dong Nai River through periodic review of its water supply in terms of availability and quality.</p> <p>In terms of alternative water sources, in the Feasibility Study of the Project, two potential water supply sources (Sai Gon River and Dong Nai River) were identified and assessed. The Dong Nai River was selected due to (i) the availability of land for the raw water intake works, (ii) a larger river flow to ensure continuity and sustainable water supply, and (iii) better surface water quality.</p> <p>In terms of water availability at the Dong Nai River, according to the June 2020 EIA, the average flow rate of the river section through Tan Uyen Town during the dry season was reported to be approximately 124 m³/s and the flow rate in the driest month was 9 m³/s. According to a procedure of inter-reservoir operation in the Dong Nai River basin issued together with Decision No. 471/QD-TT dated 24th March, 2016, Tri An Reservoir would discharge downstream at a flow rate of 120 – 130 m³/s into the Dong Nai River during the dry season. As such, the June 2020 EIA reported that no material effects would be caused to the river flow regime and the water level of the Dong Nai River by development of the Project. No conflicts were</p>		

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			<p>identified from the abstraction of water from the river by the Project in the June 2020 EIA with other water users.</p> <p>According to the report on “<i>Exploitation and Using Surface Water of Tan Hiep WTP</i>” prepared by BIWASE in August, 2019 and submitted to MoNRE for the surface water exploitation application, the flow rate of the Dong Nai River at the Intake Station during the period of 1990 to 2018 varied from 39 – 199 m³/s during the dry season and from 60 – 840 m³/s during the rainy season. In February 2011, a flow rate of 78-130 m³/s and 194 to 469 m³/s were measured during the dry and rainy seasons, respectively, with the minimum flow measured at 39 m³/s.</p> <p>According to information collected during an interview with DoNRE, Southern Institute of Water Resources Research conducted a study entitled <i>Thematic III – Evolution of Surface Water Quantity under the Report: Investigating, Surveying and Assessing the Present State of Surface Water Sources, Proposing Solutions to Surface Water Resource Management in Binh Duong Province</i> in 2014, which covered a study period between 1990 and 2012 (i.e. after the operation of Tri An Reservoir). The study found that the flow rate of the Dong Nai River ranged from 203.2 to 427.5 m³/s during the dry season (typically December to June) and from 548.8 to 999.3 m³/s during the rainy season (typically July to November). These flow rates were comparably higher than those reported in the June 2020 EIA as well as those measured in February 2011 by BIWASE. Binh Dong DoNRE also informed the site assessors during the site visit that quantity and quality of surface water from the Dong Nai River was considered stable and adequate for the Tan Hiep water supply expansion project.</p>		

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			<p>In summary, although no long-term water availability assessment was conducted by BIWASE, abstraction of raw water from the Dong Nai River by the Project does not currently appear to pose a significant environmental concern, based on information provided by DoNRE and the abovementioned studies. Nonetheless, given the increasing demand for water in Viet Nam, it is recommended that BIWASE continues to monitor its water supply from the Dong Nai River in terms of its quality and quantity and conduct a review of its water supply periodically (i.e., every five years).</p> <p>Flood risk</p> <p>In accordance with the June 2020 EIA, no history of flooding and abnormal weather issues has been recorded in past 100 years in the areas occupied by the Project. BIWASE indicated that no incidents of flooding at the WTP and the Intake Station had been experienced in the past and that flooding would be unlikely at the two locations, although no flood risk assessment has been conducted of the Project by BIWASE.</p> <p>Please see further below for risks and impacts of chlorine gas storage and use.</p>		
2 Environmental Planning and Management					
	Avoid, and where avoidance is not possible, minimise, mitigate, and/or offset adverse impacts and enhance positive	Environmental Safeguard, Policy Principle 4	Whilst BIWASE has obtained ISO14001 certification (for its environmental management system) for its various business operations, the ISO14001 certificate does not cover the operations of the WTP nor the Intake station. Furthermore, BIWASE does not have an existing group-wide E&S policy or management system. Instead, each	Medium	BIWASE should develop and implement an O-ESMP, which should include, at the minimum, the following

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organisational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.	<p>Law on Environmental Protection (55/2014/QH13)</p> <p>Law on Water Resources No. 17/2012/QH13</p> <p>Labor Law No. 10/2012/QH13</p> <p>Law on Biodiversity No. 20/2008/QH12</p> <p>Decree 40/2019/ND-CP guiding the implementation of some articles of the Law on Environmental Protection</p> <p>Decree 19/2015/ND-CP guiding the implementation of some articles of the Law on Environmental Protection. This decree provides some general provisions for soil contamination management</p> <p>Irrigation Law (08/2017/QH14)</p> <p>Decree No. 201/2013/ND-CP dated November 27, 2013 of the</p>	<p>business unit under the management of BIWASE takes responsibilities for its E&S issues arising in the respective business unit.</p> <p>At the business unit level of Tan Hiep WTP, no formalised E&S policy or management system has been established to manage its E&S matters. However, as noted above, BIWASE has developed and issued some safety guidelines and procedures applied to its water treatment plants, and these include:</p> <ul style="list-style-type: none"> • Safety guidelines for working in a confined space; • Safety guidelines for working at height; • A procedure for chemical leakage/spillage; • A procedure for electrical accidents; and • A procedure for fire and explosion incidents. <p>Whilst these guidelines and procedures provide sufficient guidance in the respective areas, limited information was available to confirm their implementation.</p> <p>Thus far, as reported by BIWASE, no environmental quality monitoring has been conducted at the existing WTP, other than raw water and treated water quality testing. That is to say, BIWASE currently does not prepare or maintain any other environmental monitoring records, such as wastewater management, solid waste management, and sludge management. Therefore, no management or monitoring records associated with these E&S areas were available.</p> <p>However, BIWASE does maintain an annual record of water treatment chemical/material use, including chlorine,</p>		<p>directly relevant E&S elements:</p> <ul style="list-style-type: none"> • An E&S policy; • E&S organisational structure, including E&S roles and responsibilities; • Air emission and ambient noise management; • Solid waste management, particularly sludge management; • Wastewater management; • Hazardous material management, including chlorine management (see below); • E&S monitoring program, including monitoring of quantity and quality of raw water supply from the Dong Nai River; • OHS management; • Emergency preparedness and response; • Community H&S management; • Contractor and subcontractor management; • Stakeholder Engagement Plan (SEP); • GRM for both internal and external stakeholders;

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		<p>Government detailing implementation of a number of articles of the Law on Water Resources;</p> <p>Decree No. 38/2015/ND-CP dated April 24, 2015 of the Government on management of waste and discarded materials.</p> <p>Decree 18/2015/ND-CP on environmental planning, strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Circular 27/2015/TT-BTNMT on strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Circular No. 25/2019/TT-BTNMT dated December 31, 2019 of MONRE on elaborating some articles of the Government's Decree No. 40/2019/ND-</p>	<p>PAC, lime powder and diesel. Please see the section on Hazardous Materials Management below.</p> <p>Specific to the expansion Project, an Environmental Management Plan (EMP) was prepared and integrated in the June 2020 EIA for the pre-construction, construction and operational phases of the Project. The EMP contains proposed mitigation measures to address the adverse impacts identified in the June 2020 EIA during the pre-construction, construction and operational phases of the Project, as briefly described below:</p> <p>Mitigation measures during the pre-construction phase:</p> <ul style="list-style-type: none"> Public disclosure of necessary information of the Project in term of land acquisition to affected people. This has been carried out according to information collected during the Audit. Please see <i>Section 4.2</i> below for further information. <p>Mitigation measures during the construction phase according to the EMP:</p> <ul style="list-style-type: none"> Mitigation measures for air pollution included proper solid waste management (due to potential odour), regular inspection and maintenance of construction vehicles, cleaning of vehicles before exiting the Project site, watering construction sites for dust suppression, and establishment of fences; Mitigation measures for generation of wastewater included construction of a temporary surface water run-off drainage system on-site, provision of mobile sanitary facilities (i.e., toilets), and construction of 		<ul style="list-style-type: none"> E&S capacity and training; Document control; and Monitoring and review. <p>The O-ESMP should incorporate all E&S (including H&S) requirements as committed in the EMP and the June 2020 EIA, of the Project as well as for the existing operations of the WTP as a whole (including the Intake Station and the raw water transmission pipelines under the operational control of the WTP) and also refer to the Applicable Standards.</p> <p>Given the construction activities are expected to complete in six months' time at the end of 2020, updating the C-ESMP may not therefore effectively address some of the EHS issues at the construction site in a timely manner (it would typically take a few months for an agreement to be reached between the Sponsor (BIWASE) and its contractor (the WTP</p>

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		<p>CP dated May 13, 2019 on amendments to decrees on guidelines for the Law on Environmental protection and providing for management of environmental monitoring services</p> <p>Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of MONRE on management of hazardous wastes;</p>	<p>surface run-off retention and sedimentation ponds on-site; and</p> <ul style="list-style-type: none"> Mitigation measures for generation of solid waste included proper solid waste management, disposal of waste into licensed landfills, provision of containers for unused oil, domestic wastes, construction of a solid waste storage area on-site, and formal arrangement (i.e. signed contracts) with local service provider(s) to collect, transport and treat hazardous waste. <p>Mitigation measures during the operational phase according to EMP:</p> <ul style="list-style-type: none"> Mitigation measures for air pollution included establishment of "green zones" which should be located on-site within the WTP and its area should represent 20% of total area of the WTP according to the WTP's Director, Construction of a drainage and sewer system, provision of covers for all manholes within the WTP and the Intake Station, and use of generators with acceptable emission levels; Management measures for generation of wastewater included construction of separate drainage systems for surface run-off and wastewater, with domestic wastewater to be collected and treated in septic tanks; Management measures for generation of solid waste include assigning workers to collect solid waste regularly, construction of a solid waste storage house, establishment of a formal contract with a local service provider to collect, transport and treat both domestic and hazardous waste; 		<p>Contractor)). As such, for the construction activities at the WTP, it is recommended that a qualified and trained EHS officer be appointed as soon as practically possible to ensure that appropriate EHS measures are developed and implemented as soon as practically possible at the construction site of the WTP. The EHS officer should also provide on-site EHS supervision during the construction phase of the Project.</p> <p>With regards to EHS/E&S capacity, an EHS or E&S organisational structure should be established, including roles and responsibilities, within Tan Hiep WTP. The EHS/E&S personnel should be appropriately trained and qualified to take on EHS roles and responsibilities.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<ul style="list-style-type: none"> • Chemical management included use of proper and clearly-labelled containers for storage of laboratory chemicals, provision of the laboratory regulations for staff working in the laboratory, construction of an appropriately designed storage facility for storage of chemicals used in the water treatment process (i.e., with secured access, built with reinforced concrete, waterproof walls and roofing, good ventilation, equipped with firefighting equipment, and 100 m away from the office areas in the WTP). • With regards to chlorine management, the EMP required installation of turbo blowers in the chlorine house to channel any chlorine gas leaks into the chlorine neutralisation tower, provision of other emergency preparedness and response systems, including an emergency shower, a chlorine leakage sensor, personal protective equipment (PPE) provision (including gas masks, eye protection and safety shoes); use of specialised vehicles for chlorine transport, preparation of an emergency plan for the chlorine leakage, and provision of regular training courses on safe transportation, storage and use of chemicals. <p>The EMP included environmental monitoring frequency, location and test parameters. For example, a sludge sample is to be tested every three months for moisture, arsenic (As), iron (Fe), manganese (Mn), lead (Pb), mercury (Hg), cadmium (Cd), and chromium (VI) (Cr (VI)). The EMP also provided roles and responsibilities of relevant stakeholders with regards to the implementation of the abovementioned mitigation measures and respective timeframes.</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>E&S Management and Implementation during the Construction Phase</p> <p>With respect to E&S management and implementation during the construction phase, BIWASE has engaged two contractors, and they are the contractor for construction activities at the Intake Station (VIWASEEN Joint Stock Company; “the Intake Station Contractor”) and No. 5 Construction Joint Stock Company (“the WTP Contractor”) for the construction activities of the raw water transmission pipelines and at the WTP. The two contractors were required to prepare a Construction E&S Management Plan (C-ESMP) for each of the three Project components. These C-ESMPs proposed detailed mitigation measures to address adverse E&S impacts identified in the updated EIA associated with communication plan with local authorities and relevant stakeholders, Grievance Redress Mechanism (GRM), human resources and a reporting system.</p> <p>An environmental monitoring program incorporated in the EMP indicated that a quarterly air sampling program would be established during the construction phase. Parameters to be monitored during the construction phase should include dust, carbon monoxide (CO), nitrous oxides (NO_x), sulphur dioxide (SO₂) and ambient noise. An air sampling program for the air quality parameters in September and November 2019 at the Intake station were prepared by the Intake Station Contractor and at the WTP in April 2020 by the WTP Contractor. The air quality monitoring results indicated that all of the tested parameters were within the thresholds of QCVN 05/2013/BTNMT on air quality and the QCVN26/2010/BTNMT on ambient noise.</p>		

At the WTP

Three construction progress reports from February to April, 2020 (one for each month) prepared by the WTP Contractor documented the construction progress, anticipated construction activities in the next month, accidents & incidents, weather and worker management. No incidents or accidents were recorded at the WTP in these three reports.

One quarterly E&S monitoring report for the period between February and April 2020 by the WTP Contractor was provided. The quarterly E&S monitoring report presented E&S mitigation measures, community communication plans, GRM process, a proposal for an EHS training course on occupational safety, health and environmental mitigation measures in early Q3 of 2020 for all workers, and environmental monitoring implemented by the contractor. However, the information in the quarterly report appeared to be mostly extracted from the original C-ESMP and did not fully represent the actual implementation of E&S mitigation measures by the contractor.

During the site visit in May 2020, it was observed that the WTP Contractor implemented some measures proposed in its C-ESMP; however, areas for improvements were identified in its implementation. The WTP Contractor has carried out mitigation measures, such as traffic management, waste management, dust pollution management, establishment of construction warning signs system, appointment of a full-time EHS personnel, implementation of community communication plans, delivery of occupational safety training courses, and preparation of monthly construction progress along with monitoring of safety issues. However, some areas for improvement were identified during the site visit, as follows:

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<ul style="list-style-type: none"> (i) Inadequate PPE provision - workers were observed wearing construction helmets and safety shoes, however, they did not use any fall arrest systems or harnesses whilst working at height; (ii) Information disclosure and external GRM – No information notice board, including complaint channels (e.g. a phone number), were available. According to representatives of Construction Supervision Consultant (CSC) and the WTP Contractor, an information notice board had been placed on-site at the early construction stage, and it had since been lost; and (iii) Safety guarding – No fences or barriers and no warning signs were installed around excavated areas on-site. <p>Please see Annex D Photolog for the above observations.</p> <p><i>At the Intake Station</i></p> <p>Construction at the Intake Station had been mostly completed at the time of the site visit, with remaining work underway being the installation of equipment, including the installation of the new chlorine gas neutralisation system at the newly constructed chlorine gas storage house. Two quarterly environmental monitoring reports for the construction of the Intake Station for the periods of Q3 and Q4 of 2019 were provided to IBIS for review. These reports presented the monitoring on the implementation of mitigation measures for wastewater, solid waste, dust, air emissions and noise from the construction phase and the completion of sampling as indicated in the updated EIA. No issues were reported, except the water quality issue further detailed below.</p>		

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			<p>E&S Management and Implementation during the Operational Phase</p> <p><i>Current WTP Operation</i></p> <p>BIWASE provided a two-page annual monitoring report, dated 20th March 2019, on occupational safety, working conditions & sanitation and firefighting prevention for every business unit under the management of BIWASE. Whilst no EHS issues were reported during the operational phase of BIWASE's business units, no emergency drills or other relevant occupational H&S (OHS) or EHS matters were reported in the report.</p> <p><i>EHS Capacity</i></p> <p>As noted above, no formal EHS or E&S organisational structure has been established within Tan Hiep WTP or within BIWASE. EHS matters are generally managed by the respective operational staff. For example, EHS matters in the laboratory are managed by laboratory technicians, and EHS matters in the existing chlorine storage house at the WTP are managed by operators in the existing chlorine storage house.</p> <p>Prior to the site visit, no officially designated EHS or E&S officer was known to have been appointed at the WTP. During the site visit, an appointment of an EHS Officer was verbally made during an interview with the Director of the WTP, whereby a member of his staff (Ms Phuong – Deputy of Human Resource and Administration Department of the WTP) was appointed to be in charge of EHS aspects for the operational activities of the WTP. However, Ms Phuong is not considered to be a suitably trained and qualified EHS professional. For the expansion Project itself, BIWASE has issued a decision on forming a</p>		

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			<p>Project Management Unit (PMU) that assigns its staff to be in charge of legal and E&S issues.</p> <p><i>E&S Training</i></p> <p>According to the Training Plan, dated 2019, provided by BIWASE, an E&S related training course was implemented on 25th October 2019. This was training course was provided by the Training Centre of BIWASE, covering occupational safety, work area hygiene, waste management (collection, transportation, separation and treatment), firefighting and prevention as well as implementation of an emergency response plan (ERP) in the event of fire accidents. BIWASE provided a list of 45 attendees from the existing WTP with their training scores.</p> <p>In general, E&S training is provided by the Training Centre of BIWASE, which functions as a centralised training organisation for BIWASE's various business units. Whilst the site accessors understood that various EHS training courses were provided to Tan Hiep WTP's staff, limited information was available to demonstrate the effectiveness of these trainings, particularly in relation to use and maintenance of PPE, first aid, emergency preparedness and response, and hazardous material management.</p> <p><i>Chemical Management and other Key E&S aspects</i></p> <p>Further details associated with chemical management and other key H&S aspects are presented further below to avoid duplication.</p> <p><i>WTP Operation post-expansion</i></p> <p>During the operational phase, in addition to the environmental monitoring program (only for water quality before and after treatment) currently being carried out</p>		

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			<p>during the operation of the existing WTP, the WTP post-expansion will be required to implement a quarterly sampling program during the operational phase involving:</p> <ul style="list-style-type: none"> (i) A sampling program of chlorine gas in compliance with QCVN 19:2009/BTNMT – <i>National technical regulation on Industrial Emission of Inorganic Substances and Dusts</i>, as stipulated in the updated EIA; (ii) Domestic wastewater monitoring which includes the following parameters: total suspended solids (TSS), biological oxygen demand (BOD₅), ammonium (NH₄⁺), nitrate (NO₃⁻), phosphate (PO₄³⁻), sulphate (SO₄²⁻) and total coliforms; and (iii) Sludge quality monitoring in accordance with QCVN50-MT/2013/BTNMT <i>National Technical Regulation on Hazardous Thresholds for Sludges from Water Treatment Process</i>. <p>Other monitoring requirements for solid waste, labour safety, traffic safety and compliance with measures set out in the June 2020 EIA (in its EMP) during the operational phase have also been indicated but with limited details for implementation, such as frequency and responsibility. Limited information on the E&S management at the Intake Station was provided in the June 2020 EIA.</p> <p>Upon completion of the Project, BIWASE is expected to comply with the EMP presented in the June 2020 EIA during its operation. In addition to the EMP, the Project or BIWASE should also develop a site-specific operational phased ESMS (O-ESMP) for E&S management during its operational phase. This O-ESMP should be tailored to the WTP and its operations as a whole, including those at the</p>		

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			<p>Intake Station and cover environmental, OHS, community H&S, and social management.</p> <p>In addition to the above, there is also a need to ensure that an appropriately trained and qualified person(s) to take on the role and responsibilities as an EHS or E&S officer(s) at the WTP and the Intake Station.</p>		
3 Consultation and Participation					
	<p>Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organisations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address</p>	<p>Environmental Safeguard, Policy Principle 5</p> <p>Law on Environmental Protection (55/2014/QH13)</p> <p>Law on Water Resources No. 17/2012/QH13L</p> <p>Law on Complaints No. 02/2011/QH13 issued on November 11, 2011;</p> <p>Government's Decree No. 40/2019/ND-CP dated May 13, 2019 on amendments to decrees on guidelines for the Law on Environmental protection and providing for management of environmental monitoring services</p>	<p>The WTP and the Intake Station have been in operation at their current locations since 2008. Based on information provided by BIWASE, neither a SEP or a GRM have been developed to-date for external stakeholders. No community H&S measures or community-focused emergency preparedness and response plans have been developed or implemented. Thus, no records of external stakeholder engagement or grievances were available.</p> <p>For the Project planning and implementation, according to the June 2020 EIA, BIWASE conducted consultation via two ways:</p> <ul style="list-style-type: none"> (i) Sending official letters, dated 4th June, 2019, to Tan Hiep Ward and Uyen Hung Ward People's Committees, Tan Uyen District, Binh Duong Province seeking comments on its draft EIA; and (ii) Organising a consultation meeting on 7th June, 2019 with representatives of Tan Hiep, Uyen Hung Ward People's Committee and members of the Fatherland Front Committee, Farmer's Association, Veteran's Association and other departments of the wards. <p>The consultation meeting took place in Tan Hiep Ward People's Committee with a total of 21 participants.</p>	Medium	<p>BIWASE should develop and implement an external SEP and GRM for engagement with external stakeholders and management of any grievances from external stakeholders. The SEP and GRM can be considered as a part of the O-ESMP of the Project, instead of the C-ESMS so that grievance redress can be followed through by BIWASE (and the contractor). Please see <i>Item #2</i> above.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	<p>issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.</p>	<p>Decree 18/2015/ND-CP on environmental planning, strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Circular 27/2015/TT-BTNMT on strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Circular No. 25/2019/TT-BTNMT dated December 31, 2019 of MONRE on elaborating some articles of the</p>	<p>According to official letters from Tan Hiep Ward and Uyen Hung Ward People's Committees on provision of comments on the original (draft) EIA of the expansion of the WTP, the contents of the consultation meeting included:</p> <ul style="list-style-type: none"> (i) Introduction of the Project by BIWASE; (ii) Presentation of the draft EIA, focusing on key impacts and relevant mitigation measures; and (iii) Questions and answers amongst the participants on the draft EIA. <p>Through the consultation meeting, local authorities and other participants raised their concerns and comments on the Project that were then incorporated in the updated EIA. Some key concerns/comments raised during the consultation are presented as follows:</p> <p>Comments/concerns from the local authorities:</p> <ul style="list-style-type: none"> • BIWASE should ensure implementation of mitigation measures in relation to dust pollution, noise, solid wastes and wastewater during the construction phase; • BIWASE would take responsibility in the form of compensation for any damages to people's livelihood, income, and H&S during the implementation of the Project; • BIWASE should ensure workers to comply with local regulations on security and cooperate regularly with local authorities to protect the community's security; • BIWASE should ensure traffic safety during construction; and 		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<ul style="list-style-type: none"> The Project should create employment opportunities for the local people. <p>Comments/concerns from local people:</p> <ul style="list-style-type: none"> BIWASE should ensure the construction would not affect people's commuting; Installation of pipelines must comply with the national regulations; BIWASE should avoid stockpiling construction materials along roadside; Prior to commencement of construction activities, BIWASE must send the tentative construction schedule to local authorities; and BIWASE should ensure clearing and hauling construction and domestic solid waste from the construction phase regularly to avoid odour. <p>Based on IBIS' current understanding, the Project or BIWASE as a company has not established any GRM for the construction phase of the Project itself. However, according to the C-ESMPs prepared by the contractors, the GRM was required to be established jointly by the contractors, CSC and PMU established by BIWASE according to the Decision No432/QD-CPN.MT dated 4th April 2019. The GRM process was supposed to be as follows:</p> <ul style="list-style-type: none"> Step 1: The affected people would raise complaints through a hotline whose information would be posted 		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>publicly in the Project information board at the gate of construction sites.</p> <ul style="list-style-type: none"> • Step 2: The complaints would be recorded and reported to the CSC/PMU. • Step 3: Joint site inspection among the CSC, contractor and complainants would be conducted to verify the complaints. • Step 4: If the complaints were related to the Project activities, the contractor would implement the corrective actions under the supervision of the CSC. <p>As mentioned above, no information notice board was identified on-site. Although BIWASE, CSC and the WTP Contractor indicated that no complaints from local communities and authorities were received, the absence of an information notice board suggests that the GRM has not been fully implemented.</p> <p>While recognising that, in the context of Viet Nam, the local commune would typically facilitate community grievance management, during both the construction phase of the Project and the operational phase of the WTP, a SEP and a GRM should be established by the Project (or BIWASE) for external stakeholder engagement and management of grievances from external stakeholders, including regulatory authorities and surrounding communities.</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
4	Information Disclose				
	<p>Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.</p>	<p>Environmental Safeguard, Policy Principle 6</p> <p>Law on Environmental Protection (55/2014/QH13)</p> <p>Decree 18/2015/ND-CP on environmental planning, strategic environmental assessment, environmental impact assessment and environmental protection plan</p> <p>Decree 40/2019/ND-CP guiding the implementation of some articles of the Law on Environmental Protection</p> <p>Circular 27/2015/TT-BTNMT on strategic environmental assessment, environmental impact assessment and environmental protection plan</p>	<p>As noted above, the draft EIA was sent to the Wards' People's Committees for review and comment on 4th June 2019. During the consultation meeting on 7th June, 2019, the draft EIA was also presented to the participants, focusing on key E&S impacts and relevant mitigation measures.</p> <p>The draft EIA was also submitted to Binh Duong DoNRE and defended in front of an appraisal board chaired by the DoNRE. From the consultation session, the draft EIA was updated by incorporating comments from the board, including additional information on waste generation during the operation of the WTP (post-construction) and some other adjustments in the EMP. In June 2020 an updated EIA was also prepared. The June 2020 EIA has been approved by DoNRE; however, it has yet been disclosed to affected people and other stakeholders.</p>	Low	<p>BIWASE to send officially the approved version of the EIA (the June 2020 EIA) to Tan Hiep Ward and Uyen Hung Ward for public disclosure. The EIA should be posted on information boards of the wards and the disclosure of the EIA should be announced, i.e., through the wards' announcement systems to its community. Where comments on the EIA are received from external stakeholders, these comments should be documented, reviewed and addressed appropriately through its external stakeholder engagement plan and, if appropriate, external GRM.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		Circular No. 25/2019/TT-BTNMT dated December 31, 2019 of MONRE on elaborating some articles of the Government's Decree No. 40/2019/ND-CP dated May 13, 2019 on amendments to decrees on guidelines for the Law on Environmental protection and providing for management of environmental monitoring services.			
5 Monitoring & Reporting					
	Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	Environmental Safeguard, Policy Principle 7 Law on Environmental Protection (55/2014/QH13) Law on Occupational Safety and Health No. 84/2015/QH13 issued on June 25, 2015 Decree No. 38/2015/ND-CP dated April 24, 2015 of the Government on	As of May 2020, BIWASE reported that the construction activities at the Intake Station had been completed and newly built facilities at the Intake Station are in operation. Installation of the Project raw water transmission pipelines has also been completed. Construction of the expansion works of the WTP have commenced, including land clearance activities in the southern area of the WTP for the Phase 2 expansion. Completion of the Phase 1 construction of the WTP expansion is expected at the end of 2020. The two contractors reportedly prepared three C-ESMPs describing the works, E&S responsibilities, adverse E&S impacts associated with construction activities and respective mitigation measures, communication plan with local authorities and relevant stakeholders, GRM, human	Medium	BIWASE should develop and implement an E&S monitoring program for the operational phase, taking into account commitments in the EMP and the approved version of the EIA. This can be considered as a part of the development and implementation of the O-ESMP, under Item #2 above.

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action												
		<p>management of waste and discarded materials.</p> <p>Circular 43/2015/TT-BTNMT on environmental monitoring</p> <p>Decree 44/2016/NĐ-CP on industrial hygiene monitoring</p> <p>Law on Water Resources (17/2012/QH13)</p> <p>Decree 39/2016/NĐ-CP guiding the implementation of the Law on Occupational Health and Safety</p> <p>Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of MONRE on management of hazardous wastes;</p> <p>Circular No. 22/2010/TT-BXD dated December 03, 2010 of MOC on labor safety in work construction.</p>	<p>resource and reporting system. According to BIWASE, these three C-ESMPs were submitted to the CSC and PMU for approval one to two months after the construction contracts were signed.</p> <p>As mentioned above, BIWASE provided two quarterly environmental monitoring reports for the construction activities at the Intake Station for the periods of Q3 and Q4 of 2019 and one quarterly environmental monitoring report of the construction activities at the WTP for Q1 of 2020. These three monitoring reports were compiled based on the monitoring requirements stipulated in the updated EIA, including monitoring on pollution sources from the construction activities, implementation of mitigation measures by the respective contractors, conducting air and water quality sampling programs and assessment of the effectiveness of the implementation of mitigation measures. Based on these three environmental monitoring reports, the monitoring reports were generally compiled in line with the C-ESMPs, and no compliance issues were reported. The sampling programs undertaken showed that the air quality near the construction sites was good, and ambient noise level was within the national permissible threshold. However, water quality of the Dong Nai River at the Intake Station was found to contain elevated levels of pollutants as compared to water quality thresholds in Column A of OCVN08-MT:2015/BTNMT. The water quality monitoring results in the Q4 2019 quarterly monitoring report are presented below:</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Measured concentrations</th> <th>Column A of Water Quality Standards</th> </tr> </thead> <tbody> <tr> <td>BOD5</td> <td>7-13 mgO₂/l</td> <td>6 mgO₂/l</td> </tr> <tr> <td>TSS</td> <td>38-45 mg/l</td> <td>30 mg/l</td> </tr> <tr> <td>Fe (iron)</td> <td>1.25-1.4 mg/l</td> <td>1 mg/l</td> </tr> </tbody> </table>	Parameter	Measured concentrations	Column A of Water Quality Standards	BOD5	7-13 mgO ₂ /l	6 mgO ₂ /l	TSS	38-45 mg/l	30 mg/l	Fe (iron)	1.25-1.4 mg/l	1 mg/l		
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			<table border="1" data-bbox="875 309 1570 341"> <tr> <td data-bbox="875 309 1025 341">NH4+</td> <td data-bbox="1025 309 1283 341">0.56 – 0.77</td> <td data-bbox="1283 309 1570 341">0.3 mg/l</td> </tr> </table> <p data-bbox="875 363 1570 517">Other than the three construction-phase quarterly monitoring reports, no other environmental (or social and H&S) monitoring reports are known to have been prepared by the Project for the construction phase or the operational phase of the existing WTP.</p> <p data-bbox="875 539 1570 884">According to BIWASE, no regulatory EHS reporting has been required of its existing operation at the WTP thus far. In addition to the environmental monitoring required by law as part of its environmental commitments specified in the June 2020 EIA, the Project should also develop an environmental (and social and H&S) monitoring program to monitor its E&S performance over its lifespan. This should include relevant E&S aspects, including waste, ambient noise, chemical and hazardous materials management as well as monitoring of its water supply from the Dong Nai River in terms of its quality and quantity.</p>	NH4+	0.56 – 0.77	0.3 mg/l		
NH4+	0.56 – 0.77	0.3 mg/l						
6 Unanticipated Environmental Impacts								
	Where unanticipated environmental impacts become apparent during project implementation, the borrower/client will update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential	Environmental Safeguard, Policy Principle 7 Law on Environmental Protection (55/2014/QH13)	<p data-bbox="875 979 1570 1197">Whilst no documented evidence has been identified to indicate any unanticipated adverse environmental (and social) impacts caused by the construction activities of the Project, or the existing operational activities of the WTP, it is recognised that limited environmental monitoring has been conducted at the WTP and the Intake Station since their establishment in 2008.</p> <p data-bbox="875 1219 1570 1369">With regards to potential unanticipated environmental impacts, the WTP post-expansion will have a water supply capacity of 219,500 m³/d, which is nearly double its previous water supply capacity. To understand downstream wastewater treatment capacity in the</p>	Low	None at this point.			

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action																														
	<p>impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.</p>		<p>surrounding area, wastewater treatment related information was collected from BIWASE, who is also a major wastewater treatment service provider in Binh Duong Province, as shown below.</p> <table border="1" data-bbox="875 456 1576 715"> <thead> <tr> <th>No.</th> <th>Wastewater treatment plant</th> <th>Status</th> <th>Treatment capacity (m³/d)</th> <th>Operation Start</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Thu Dau Mot</td> <td>Existing</td> <td>17,650</td> <td>2013</td> </tr> <tr> <td>2</td> <td>Thuan An</td> <td>Existing</td> <td>17,000</td> <td>2017</td> </tr> <tr> <td>3</td> <td>Di An</td> <td>Existing</td> <td>20,000</td> <td>2018</td> </tr> <tr> <td>4</td> <td>Tan Uyen I</td> <td>Planned</td> <td>15,000</td> <td>Q2 2020</td> </tr> <tr> <td>5</td> <td>Tan Uyen II</td> <td>Planned</td> <td>25,000</td> <td>2025</td> </tr> </tbody> </table> <p>Based on the above information, wastewater treatment capacity in the areas of its water end users is expected to reach 69,650 m³/d by Q3 2020, with an additional planned treatment capacity of 25,000 m³/d expected in 2025. In addition, during the site visit, BIWASE informed that 50 percent of its water supply would be provided to the various industrial zones and clusters, which would typically have their own centralised industrial wastewater treatment facilities. During the interview with DoNRE, it was also confirmed that all industrial zones and clusters within Binh Duong Province would have centralised wastewater treatment facilities with a capacity sufficient to treat the anticipated increase of effluent in the industrial zones and clusters. Based on the above information, a significant increase in water supply from the WTP is unlikely to result in a significant increase in the release of untreated effluent.</p>	No.	Wastewater treatment plant	Status	Treatment capacity (m ³ /d)	Operation Start	1	Thu Dau Mot	Existing	17,650	2013	2	Thuan An	Existing	17,000	2017	3	Di An	Existing	20,000	2018	4	Tan Uyen I	Planned	15,000	Q2 2020	5	Tan Uyen II	Planned	25,000	2025		
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Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
7	Biodiversity Conservation and Sustainable Natural Resources Management				
	<p>Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognised endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially</p>	<p>Environmental Safeguard, Policy Principle 8</p> <p>Law on Environmental Protection (55/2014/QH13)</p> <p>Law on Water Resources No. 17/2012/QH13</p> <p>Law on Biodiversity No. 20/2008/QH12</p>	<p>Based on a review of historical aerial imagery of the Project areas and their surroundings and site observations made during the site visit in May 2020, the Project is situated in urbanized areas or modified habitats, where the ecological system has been heavily altered by human activities. No critical habitats or legally protected areas are identified within the Project areas or in their vicinity. This observation concurs with the findings in the June 2020 EIA. According to the June 2020 EIA, biological resources and ecosystems within the Project areas are poor, and there are no rare and endangered species but mainly ecosystems created by humans that are not high in ecological value. Although the Project areas are not located in areas of critical habitats, the Intake Station is situated along the Dong Nai River, which is considered an ecological and economically important river in Viet Nam. As such, there is a need to ensure robust environmental protection measures at the Intake Station are implemented to protect water quality of the Dong Nai River.</p> <p>An external factors review (EFR) has been conducted which included a review of publicly available biodiversity-related information in relation to protected habitats. Please see Annex C.</p>	Low	See Item #2 above.

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.				
8 Pollution Prevention and Abatement					
a	<p><i>Pollution Prevention, Resource Conservation</i></p> <p>Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when</p>	<p>Environmental Safeguard, Policy Principle 9</p> <p>Law on Environmental Protection (55/2014/QH13)</p> <p>Law on Water Resources (17/2012/QH13)</p> <p>Law on Chemicals (06/2007/QH12) Irrigation Law (08/2017/QH14)</p> <p>Decree 38/2015/ND-CP on waste management</p> <p>Circular 36/2015/TT-BTNMT on hazardous waste management</p>	<p>No E&S management system has been implemented at the existing WTP since it was established in 2008, and none is required by law in Viet Nam. However, in the June 2020 EIA prepared for the Project, a set of environmental mitigation measures were proposed in the form of an EMP for implementation during the pre-construction, construction and operational phases of the Project. However, these mitigation measures generally do not refer to international good practices, such as the WBG EHS Guidelines. Limited details were also provided in the June 2020 EIA. As such, it is recommended that a robust ESMP is developed and implemented for the Project and the WTP's operations as a whole.</p> <p>Specific environmental aspects further discussed below are:</p> <ul style="list-style-type: none"> • Wastewater management; • Air emission management; 	Medium	See Item #2 above.

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	avoidance is not possible, minimise or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phaseouts.	Decree 201/2013/ND-CP guiding the implementation of the Law on Water Resources, including the issuance of groundwater extraction, surface water extraction and wastewater discharge permits	<ul style="list-style-type: none"> Noise management; Waste management; Hazardous material management; Pesticide use and management; and Greenhouse gas emissions. 		
b	<i>Wastewater Management</i>	Environmental Safeguard, Policy Principle 9 Vietnamese technical regulations on environmental and discharge quality (QCVNs)	<p><i>Current wastewater management at the WTP</i></p> <p>At the existing WTP, no wastewater sources, except for sanitary wastewater and surface water run-off, were identified. Sanitary wastewater is stored in one septic tank on-site situated beneath the administration building. BIWASE does not currently implement any wastewater management or reporting. Whilst no records of management of sludge generated from the septic tank were maintained, BIWASE indicated that the septic tank would be emptied every two years by a 3 m³ vacuum tanker vehicle equipped with a sludge pump. The sludge would then be transported to Binh Duong Waste Treatment Complex for final disposal.</p>	Low	See Item #2 above. BIWASE should install temporary measures to address any potential surface run-off issues, e.g. covering open exposed areas, revegetation, sediment traps etc. in the Phase 2 expansion area where the land has been cleared and exposed.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>With regards to stormwater or surface water run-off, a surface stormwater drainage system, including concrete lined system has been installed within the existing WTP which is connected to the municipal drainage system along Road No. 85.</p> <p><i>During the construction phase of the Project</i></p> <p>According to the June 2020 EIA, mitigation measures for wastewater management during the construction phase include construction of temporary surface run-off drainage system on-site, provision of mobile sanitary facilities (i.e. toilets), and construction of sediment retention ponds on-site.</p> <p>During the site visit, no obvious wastewater sources were identified on-site within the construction site of the WTP. Sanitary facilities were built by the WTP Contractor adjacent to the contractor's construction office within the premises of the construction site. No temporary surface run-off drainage system or sediment retention ponds were identified within the construction site. It is understood that none have been constructed to-date at the construction area within the WTP. It is noted that the rainy season typically falls between July and November each year. Given the construction activities commenced in the beginning of 2020, the impacts of surface run-off have likely been limited. Although the construction site at the Project has not yet been completed, much of the land area is now occupied by newly constructed facilities leaving limited unpaved areas exposed. However, in the Phase 2 expansion area, the land appeared to be mostly unpaved and exposed. Therefore, there remains a need to prevent</p>		

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>run-off from these areas, e.g. through revegetation and/or installation of sediment traps.</p> <p><i>During the operational phase of the Project</i></p> <p>According to the June 2020 EIA, mitigation measures for wastewater management include construction of separate drainage systems for surface run-off and domestic wastewater, and domestic wastewater to be collected and treated in septic tanks.</p> <p>Given the nature of its operations and the limited sources of wastewater on-site, no material environmental issues were identified with regards to wastewater management.</p>		
c	Air Emission Management	Environmental Safeguard, Policy Principle 9	<p><i>Current air emissions management at the WTP and the Intake Station</i></p> <p>Based on observations made during the site visit, no obvious air emission point sources were identified at the existing operations of the WTP and at the Intake Station, except for the use of back-up diesel generators. There are currently two generators at the WTP and one generator at the Intake Station. No air emission testing has been conducted for these diesel backup generators. No air emission monitoring of the generators is required by law. It was reported that these diesel generators were rarely used. Air emissions from these sources are not considered a significant environmental issue.</p> <p>In addition, sludge generated from the water treatment processing is stored and dried in the sludge drying yard (consisting of a total of seven drying beds according to the June 2020 EIA) at the WTP. It is noted that sludge</p>	Low	See Item #2 above.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>generated at the WTP is mainly suspended sediment from raw water. No strong odour or foul smell was detected by the site assessors during the site walkover in May 2020.</p> <p><i>During the construction phase of the Project</i></p> <p>According to the June 2020 EIA, mitigation measures for air pollution included proper solid waste management (due to odour management), regular inspection and maintenance of construction vehicles, cleaning of vehicles before leaving the construction site, watering of construction sites for dust suppression, and establishment of boundary fences.</p> <p>At the time of site visit, no heavy construction machinery (i.e. excavators, rollers or concrete pouring machinery) were observed. Earth works, including land clearing, had already been completed. Thus, very limited dust pollution was observed. No combustion sources or signs of on-site waste burning was observed.</p> <p>Based on the site assessors' observations and information provided by BIWASE, no worker's camps and canteens were on-site in the construction area.</p> <p><i>During the operational phase of the Project</i></p> <p>According to the June 2020 EIA, mitigation measures for air pollution included construction of green zones, construction of drainage and sewerage systems, provision of covers for all manholes within the WTP and the Intake Station, and use of generators with acceptable emission levels. These measures were generally incorporated in the design of the Project. In addition, based on the site</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>assessors' observations of the existing WTP, covers of all manholes and building of drainage and sewer system have been part of the existing WTP.</p> <p>Given the nature of its operations and the limited sources of air emissions, no material environmental issues were identified with regards to air emission management.</p>		
d	<p><i>Noise Management</i></p>	<p>Environmental Safeguard, Policy Principle 9</p> <p>QCVN 26/2010/BTNMT on National technical regulations on Noise</p>	<p><i>Current noise management at the WTP and the Intake Station</i></p> <p>Based on observations made during the site visit, no obvious significant noise or vibration sources, except for the pump houses and diesel backup generators, were identified from the existing operations of the WTP and at the Intake Station.</p> <p>No ambient noise monitoring at the WTP has been conducted to-date. At the existing WTP, area with high noise levels were identified around the pump houses (referred to as "Grade II Pump houses" at the WTP). These pump houses were concrete-structured buildings, which serve as some form of physical noise barrier. Based on the on-site observations, ambient noise levels generated in the pump houses diminished significantly at the administration house approximately 130 m away and at the main entrance of the WTP. There are two generators at the WTP housed in the generator rooms. As they are reportedly not frequently used and noise generation from the generators (housed in the generator rooms) is not considered a significant ambient noise issue.</p> <p>At the Intake Station, one generator was located inside the generator building equipped with soundproofed walls. One existing pump house is present at the Intake Station.</p>	Low	See Item #2 above.

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			<p>Noise was considered elevated inside the pump house. However, ambient noise level was considered to be low outside the pump house. No significant ambient noise issues were identified.</p> <p><i>During the construction phase of the Project</i></p> <p>According to the June 2020 EIA, mitigation measures for noise pollution included turning off all equipment and machinery if they were not in use for construction or maintenance activities regularly during construction and no transport of construction materials at night (9:00 pm to 6:00 am). According to QCVN 26/2010/BTNMT on National Technical Regulations on Noise, noise limits during the day and the night are shown in the table below for different receptor types:</p> <table border="1" data-bbox="875 852 1563 1166"> <thead> <tr> <th rowspan="2">Receptor</th> <th colspan="2">One Hour L_{Aeq}(dBA)</th> </tr> <tr> <th>Day time 06:00-21:00</th> <th>Night time 21:00-06:00</th> </tr> </thead> <tbody> <tr> <td>Educational facilities, health, facilities, libraries, pagoda, church</td> <td>55</td> <td>45</td> </tr> <tr> <td>Residential, housing, administrative agencies, hotels, commercial areas</td> <td>75</td> <td>55</td> </tr> </tbody> </table> <p>Note that the WBG EHS General Guidelines requirements are:</p> <table border="1" data-bbox="875 1267 1563 1358"> <thead> <tr> <th rowspan="2">Receptor</th> <th colspan="2">One Hour L_{Aeq}(dBA)</th> </tr> <tr> <th>Day time 07:00-22:00</th> <th>Night time 22:00-07:00</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Receptor	One Hour L _{Aeq} (dBA)		Day time 06:00-21:00	Night time 21:00-06:00	Educational facilities, health, facilities, libraries, pagoda, church	55	45	Residential, housing, administrative agencies, hotels, commercial areas	75	55	Receptor	One Hour L _{Aeq} (dBA)		Day time 07:00-22:00	Night time 22:00-07:00					
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			Residential, institutional, educational	55	45		
			Industrial, commercial	70	70		
<p>Key differences between the Vietnamese and WBG EHS General Guideline requirements are the limits at residential and housing locations during the day time and the hour ranges.</p> <p>During the site visit, no heavy construction machinery, material transportation activities or metal working (e.g. grinding) were observed. As such, noise levels were not elevated at the time of the site visit. Based on the progress of the construction activities, it is anticipated that the use of heavy equipment and machinery would be limited in the next stages of construction to hand tools etc.</p> <p><i>During the operational phase of the Project</i></p> <p>According to the June 2020 EIA, ambient noise during the operational phase of the Project is expected to be low, and no mitigation measures were required for off-site receptors.</p> <p>Whilst noise pollution does not likely pose a significant environmental issue, consideration of environmental noise in management plans should be developed, which should include an ambient noise mapping exercise to better understand noise levels at various locations within the WTP and the Intake Station. This can be considered a part of the O-ESMP.</p> <p>Please see Occupational Health & Safety Management for occupational noise exposure further below.</p>							

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
e	Waste Management	<p>Environmental Safeguard, Policy Principle 9</p> <p>Decree No. 38/2015/ND-CP dated April 24, 2015 of the Government on management of waste and discarded materials.</p> <p>Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of MoNRE on management of hazardous wastes;</p> <p>QCVN 07-1: 2016/BXD National Technical Regulation Technical Infrastructure Works Water Supply</p> <p>QCVN 50:2013/BTNMT on National Technical Regulation on Hazardous Thresholds for Sludges from Water Treatment Process</p>	<p><i>Current waste management at the WTP and the Intake Station</i></p> <p>BIWASE indicated that no monitoring of non-hazardous and hazardous waste generation has been carried out at the existing WTP (and the Intake Station). Therefore, no documented records of historical waste generation were available for review.</p> <p>Based on observations made during the site visit and information presented in the June 2020 EIA, the key general solid wastes generated at the WTP and Intake Station are:</p> <ul style="list-style-type: none"> • Waste packaging (such as plastic, wood etc.); and • General domestic waste such as food etc. <p>In the absence of solid waste data, based on observations made during the site visit and information presented in the June 2020 EIA, in addition to general solid waste, the key types of hazardous solid wastes generated at the WTP and Intake Station during the operational phase would likely include:</p> <ul style="list-style-type: none"> • Waste sludge (generated from the water treatment process as discussed further below); • Empty chemical containers; • Used printing cartridges; • Expired fluorescent light tubes; • Empty containers of laboratory chemicals and unused/expired chemicals from the laboratory, • Used batteries, and 	Medium	<p>BIWASE should carry out periodic quality testing of the sludge in line with the EMP of the June 2020 EIA to ensure that it meets QCVN 50:2013/BTNMT on National Technical Regulation on Hazardous Thresholds for Sludges from Water Treatment Process.</p> <p>A solid waste management plan should also be developed, as part of the O-ESMP in line with the Applicable Standards. The waste management plan within the O-ESMP should be implemented to allow monitoring of solid waste generation on-site and registration with DoNRE as a hazardous waste generator, if required.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<ul style="list-style-type: none"> • Waste oil from generators and waste contaminated materials from the repair and maintenance activities. <p>BIWASE provided the following waste related service contracts:</p> <ul style="list-style-type: none"> • Contract No.1581-RCN/HD-KT/17 between the WTP and the Waste Treatment Unit of BIWASE for sludge treatment and reuse, which is valid until 31st December 2020; • Contract No.2238-RNH/HD-KT/19 between the WTP and the Waste Treatment Unit of BIWASE for hazardous waste collection and disposal, which is valid until 20th September 2022 in accordance with Circular No. 36/2015/TT-BTNMT, dated 30th June, 2015, of MoNRE on management of hazardous wastes; and • Contract No1713-RTT/HD-KT/19 between the WTP and the Waste Treatment Unit of BIWASE for general waste collection and disposal, which is valid until 25th September 2022. <p>Although no waste generation monitoring data was available, it was reported in the June 2020 EIA that the total volume of hazardous waste from the WTP post-expansion was estimated at 14,722 kg per year (no breakdown was provided). Based on this data, it is estimated that hazardous waste generated from the existing WTP (i.e. prior to the expansion Project) would amount to approximately half of this total volume per year (i.e. around 7,350 kg per year, although no breakdown is available). According to Decree 38/2015/ND-CP on management of waste and discarded materials, and Circular No. 36/2015/TT-BTNMT dated 30th June 2015 of MoNRE on management of hazardous wastes, waste</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>generators of hazardous waste with a volume greater than 600 kg per year are required to register with DoNRE.</p> <p>According to BIWASE, laboratory waste is generally stored in the laboratory. General waste is collected in a 100 litre bin or a waste skip. The volume of general waste generated is not currently monitored.</p> <p>Sludge is dried in the sludge drying yard and directly transported off-site for waste treatment and reuse. No other designated storage for hazardous waste storage was identified during the site visit. During the site visit, the storage areas for other hazardous wastes were not observed.</p> <p><i>During the construction phase of the Project</i></p> <p>According to the June 2020 EIA, solid waste generated during the construction phase of the Project included two main types of solid wastes, and they were: (i) construction solid waste (including demolition waste), and (ii) domestic solid waste.</p> <p>Construction waste was considered to include concrete rubble, plastic, metal, glass, asphalt from surfaces, wood and general refuse. Domestic solid waste mainly included used packaging, plastic bags, bottles, and food containers. The total volume of construction waste was estimated at 35.746 m³, whilst the domestic waste would be generated at a rate of approximately 100 kg per day for the entire Project according the June 2020 EIA.</p> <p>According to BIWASE, all of the construction solid waste is collected and disposed of in the Binh Duong Waste Treatment Complex approximately 20 km west from the</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>WTP in Ben Cat Town. As confirmed by BIWASE, no monitoring or recording of solid waste generation during the construction phase has been undertaken. Domestic waste was collected in dust bins on-site and was transported by the Waste Treatment Unit of BIWASE to Binh Duong Waste Treatment Complex for disposal and treatment.</p> <p><i>During the operational phase of the Project</i></p> <p>The June 2020 EIA identified the types and sources of waste with the respective mitigation measures for collection, transportation and treatment. Based on the June 2020 EIA, hazardous wastes generated during operation would include:</p> <ul style="list-style-type: none"> • Waste sludge (generated from its water treatment process; discussed further below); • Empty chemical containers; • Used printing cartridges; • Expired fluorescent light tubes; • Empty containers of laboratory chemicals and unused/expired chemicals from the laboratory, • Used batteries, and • Waste oil from generators and waste contaminated material from the repair and maintenance activities <p>As mentioned above, the total volume of hazardous waste from the WTP post-expansion was estimated at 14,722 kg per year.</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>With regards to solid waste management, there is a need for BIWASE to develop and implement a solid waste management plan to capture, at a minimum, waste types, volume, treatment and disposal methods, as well as on-site waste storage and segregation for both hazardous and non-hazardous wastes, including registration with DoNRE as a hazardous waste generator, based on the hazardous waste amounts generated.</p> <p><i>Sludge management</i></p> <p>Sludge management is specifically discussed herein mainly due the volume of sludge generated daily from the water treatment process at the WTP.</p> <p>The collected wet sludge is first pumped to a sludge drying yard in which the sludge is levelled and sun-dried. The sludge drying yard is an open (unsheltered) area with a shallow concrete-paved basin located in the north-eastern portion of the WTP. It was reported that the sun-dried sludge is removed from the WTP once or twice a month, depending on the prevailing weather. Once sufficiently dry, the dewatered sludge is transported to the Binh Duong Waste Treatment Complex by truck for treatment and reuse.</p> <p>The Binh Duong Waste Treatment Complex is located approximately 20 km west of the WTP in Ben Cat Town and reportedly has a total surface area of approximately 100 ha and is under the management of BIWASE. The area which was used for brick making represented nearly 10,000 m² in total land area and was visited during the site visit in May 2020. Limited information was available with regard to the operation of the sludge-to-brick making</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>process, as no workers were available for interview during the site visit. However, according to information provided by BIWASE, the dried sludge is processed and recycled into bricks using a stabilisation and solidification process in an area within the Binh Duong Waste Treatment Complex designated for sludge treatment and reuse. Under the management of BIWASE, the Waste Treatment Complex has an approximate area of 100 ha for various waste disposal and treatment processes. Sludge collected from the WTP and other water treatment plants under the management of BIWASE is said to be treated at this Waste Treatment Complex by Green Products Joint Stock Company, an independent private company, of which BIWASE is a majority shareholder.</p> <p>Whilst this waste treatment process allows the dried sludge to become useful, no periodic or regular testing of the quality of the dried sludge is routinely carried out as part of the pre-waste treatment process by the WTP or BIWASE to confirm the sludge's suitability for reuse. According to QCVN 07-1:2016/BXD National Technical Regulation Technical Infrastructure Works Water Supply and QCVN 50:2013/BTNMT on National Technical Regulation on Hazardous Thresholds for Sludges from Water Treatment Processes, sludge is considered suitable for reuse (i.e. compost, soil amendment and other uses) only if its heavy metal and other hazardous content falls within the regulatory thresholds. In the absence of periodic or regular quality testing of the dewatered sludge, limited evidence is available to demonstrate compliance with the relevant regulations.</p> <p>However, it is noted that, for the preparation of the June 2020 EIA, a sample of dewatered sludge was tested for selected heavy metals in June 2019 (see the table below).</p>		

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			<p>According to the analytical results, heavy metal concentrations of the tested sludge sample were measured within the regulatory thresholds stipulated in QCVN 50:2013/BTNMT.</p> <table border="1" data-bbox="878 454 1568 710"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Regulatory limits (QCVN 50:2013/BTNMT)</th> <th>Test result</th> </tr> </thead> <tbody> <tr> <td>Arsenic</td> <td>mg/L</td> <td>2</td> <td>< 0.002</td> </tr> <tr> <td>Cadmium</td> <td>mg/L</td> <td>0.5</td> <td>< 0.01</td> </tr> <tr> <td>Mercury</td> <td>mg/L</td> <td>0.2</td> <td>< 0.002</td> </tr> <tr> <td>Lead</td> <td>mg/L</td> <td>15</td> <td>0.21</td> </tr> <tr> <td>Zinc</td> <td>mg/L</td> <td>250</td> <td>1.86</td> </tr> </tbody> </table> <p>During post-expansion operation, the WTP will generate an estimated total volume of 7,682.5 kg of wet sludge per day according to the June 2020 EIA. As the maximum moisture in the wet sludge was said to be approximately 70%, an approximate 3,450 kg dewatered sludge would be generated per day. Given the large volume of dewatered sludge generated at the WTP post-expansion, there is a need to ensure that a robust management plan is developed and implemented to minimize its E&S risks and impacts associated with sludge management. This should include management of sludge leachate, if any, periodic quality testing of the dewatered sludge before treatment and reuse, occupational H&S associated with sludge handling/ management, and potential E&S impacts on surrounding community, such as odour generated from sludge storage during the rainy season, if any. Please note that at the time of the site visit, no odour issues associated with sludge management were identified, and the weather was relatively dry and sunny.</p>	Parameter	Unit	Regulatory limits (QCVN 50:2013/BTNMT)	Test result	Arsenic	mg/L	2	< 0.002	Cadmium	mg/L	0.5	< 0.01	Mercury	mg/L	0.2	< 0.002	Lead	mg/L	15	0.21	Zinc	mg/L	250	1.86		
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ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			In accordance with the June 2020 EIA, sludge will be tested every three months for moisture, As, Fe, Mn, Pb, Hg, Cd, and Cr (VI) as part of the EMP committed in the EIA.		
ff	Hazardous Materials	<p>Environmental Safeguard, Policy Principle 9</p> <p>Law on Chemicals (06/2007/QH12)</p> <p>Law on Occupational Health and Safety (84/2015/QH13)</p> <p>Decree 39/2016/ND-CP guiding the implementation of the Law on Occupational Health and Safety</p> <p>Decree 113/2017/ND-CP guiding the implementation of the Law on Chemicals</p> <p>Circular 32/2017/TT-BCT guiding the implementation of the Law on Chemicals and Decree 113/2017/ND-CP</p> <p>Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of MONRE on</p>	<p><i>Current hazardous materials and chemicals management at the WTP and the Intake Station</i></p> <p>Based on information provided by BIWASE and observations made during the site visit, hazardous materials, including chemicals, used on-site during the operational phase of the Project would fall largely into the following three categories:</p> <ul style="list-style-type: none"> • Chemicals used in the laboratory, mainly for water quality testing; • Diesel mainly used in backup generators; and • Chemicals used in the water treatment process. <p>Laboratory-use chemicals</p> <p>Based on the June 2020 EIA and the list of chemicals proposed for purchase in December 2019 provided by BIWASE, laboratory-use chemicals are mainly used for water quality testing in the laboratory at the WTP. No hazardous materials subject to international and national bans were identified from the list.</p> <p>The total volume of laboratory chemicals used per year was estimated at approximately 120 kg for the existing WTP. Post-expansion, the volume would likely increase to</p>	High	<p>Relevant and appropriate best management practices associated with hazardous materials storage and handling should be considered and incorporated in the O-ESMP. These may include secondary containment provisions for the storage of diesel in the aboveground storage tanks, emergency response provisions, including equipment such as eye wash stations or eye wash bottles, and periodic physical integrity inspections of aboveground storage tanks (i.e., every one to two years).</p> <p>A systematic review of the existing and future chlorine transport, storage, handling and use should be undertaken by a competent third party(ies) that considers the management and mitigation measures required to ensure the risk are as low</p>

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		<p>management of hazardous wastes.</p> <p>QCVN 07-1: 2016/BXD National Technical Regulations – Technical Infrastructure Works Water Supply Works</p>	<p>approximately 240 kg for the entire WTP (the EIA does not provide such data).</p> <p>With a floor area of 24 m², the laboratory is located within the administration building. During the site visit, it was observed that the water quality testing chemicals were stored on open wooden racks placed on a laboratory bench in the middle of the room. The chemicals were generally well labelled with their name, chemical use, expiry date, and safety warnings. Corrosive substances, such as hydrochloric acid and sulphuric acid, were stored separately in a fume hood. The laboratory has a door with a lock, two windows and was equipped with a fume hood. It was reported that unused chemicals and wastewater generated in the laboratory would be stored in two plastic containers, each of 20L capacity. The WTP has signed a contract with BIWASE's Waste Treatment Unit for collecting and treating its laboratory waste every three months. According to an interview with a representative of BIWASE, an average of approximately 40 L of wastewater and unused chemicals would be generated every three months (which is expected to increase after the Project is complete). No material E&S issues were identified based on-site observations and given the routine laboratory practices and the limited volume of waste generation.</p> <p>Diesel Use</p> <p>At the WTP, there are two generators (one of 1,500 kVA and another of 1,000 kVA) as a backup source of power. The generators are located in two secured generator houses close to each other. The generator houses are locked when the generators are not in use. The rooms are marked "Generator House", with a warning sign in</p>		<p>as reasonably practicable (for on-site workers and off-site receptors). This may include a workshop, a design review and update, and/or conducting a hazard assessment, such as a HAZOP, to effectively assess potential hazards and necessary mitigation measures, modelling of chlorine gas release, mitigation measures (both preventive and responsive mitigation measures), preventative maintenance and inspection regimes and management plans (including emergency response). The mitigation hierarchy should be applied in the management and mitigation measures to be applied.</p> <p>It is recognised that the chlorine gas management review, be it via a workshop, a HAZOP, or a design review and update, could take months to a year to generate an outcome.</p> <p>Whilst the chlorine gas review process is being</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>Vietnamese “Authorised personnel only” and regulations on fire fighting and prevention on the wall of the generator houses. Based on the diesel use records in 2019, an annual total of 22,000 L of diesel was used, averaging 1,833 L per month, reportedly this is equivalent to 5 to 6 hours of 1,500 kVA generator use and 8 to 10 hours of 1,000 kVA generator use per month.</p> <p>For the use of the back-up generators at the WTP, a diesel aboveground storage tank is present. It is made of steel with a storage capacity of 4,500 L in an open area between the generator house and the pumping station enclosed in brick walls and steel fencing with locked access over concrete flooring (note that this unit is not bunded). An interview with the operators was held during the site visit. The operators informed that diesel would be transported by truck by the diesel supplier and pumped into the storage tank. No significant oil staining was observed on the flooring around the diesel storage tank during the site visit. No evidence is available to demonstrate that a physical integrity test of the diesel storage tank (or the associated aboveground pipework) has been conducted. However, the diesel storage tank appeared to be in generally good physical condition. No obvious signs of rust or damage on the tank were observed during the site visit.</p> <p>There is one generator of a capacity of 1,800 kVA in the generator house at the Intake Station. The generator house is usually locked when the generator is not in use. Again, the generator house is marked in Vietnamese as a “Generator House”, a warning sign “Authorised personnel only” and regulations on fire fighting and prevention on the wall of the generator house. However, during the site visit, the operator could not provide any records of its diesel</p>		<p>developed, at the minimum, the following mitigation measures should be considered and implemented as soon as possible:</p> <ul style="list-style-type: none"> • Imposing a maximum quantity of chlorine gas allowed to be stored both at the WTP and the Intake Station at all times; • Inspection of the chlorine gas leakage detection and response system (including the chlorine gas detection system, the blower, and the neutralisation system) by a qualified, and preferably certified, independent third party; • Provisions of appropriate PPE for the handling and storage of chlorine gas cylinders and in the event of a chlorine gas related emergency scenario; and • Development and implementation of an emergency preparedness and response plan for a chlorine gas leak

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			<p>use. A diesel aboveground storage tank, with aboveground pipework, is made of steel with a capacity of 2,000 L and is located immediately adjacent to the generator house secured by steel fencing with locked access. No secondary containment has been provided for the diesel storage tank. However, the tank appeared to be in generally good physical condition. No obvious signs of rust or damage on the tank were observed during the site visit. It is understood that the generator is rarely used.</p> <p>According to BIWASE, no other fuels are used on-site, and the WTP and the Intake Station do not have canteens.</p> <p>Water treatment chemicals</p> <p>Based on a report supplied by BIWASE on monthly chemical use in 2019, the monthly usage of water treatment chemicals at the WTP in 2019 shows that PAC and lime usage fluctuated significantly over a period of 12 months (see the table below). PAC usage ranged between 45,900 and 214,800 kg per month, whilst lime usage ranged from none to 40,530 kg lime per month. By comparison, monthly chlorine usage was relatively stable at an average of 3,543 kg per month and ranged from 2,603 to 4,192 kg per month in 2019.</p> <table border="1" data-bbox="875 1157 1565 1369"> <thead> <tr> <th>Month</th> <th>PAC (kg)</th> <th>Lime (kg)</th> <th>Chlorine (kg)</th> </tr> </thead> <tbody> <tr> <td>January</td> <td>64,368</td> <td>1,850</td> <td>3,122</td> </tr> <tr> <td>February</td> <td>45,900</td> <td>0</td> <td>2,603</td> </tr> <tr> <td>March</td> <td>68,700</td> <td>0</td> <td>3,048</td> </tr> </tbody> </table>	Month	PAC (kg)	Lime (kg)	Chlorine (kg)	January	64,368	1,850	3,122	February	45,900	0	2,603	March	68,700	0	3,048		<p>scenario, including elements of community H&S, such as emergency drill involving surrounding community members.</p> <p>In addition to chlorine gas management, a hazardous material management plan should be developed as part of the O-ESMP for implementation at the WTP and the Intake Station.</p> <p>Furthermore, BIWASE and its contractor(s) should also provide an appropriate area designated for chemical and hazardous material storage for use during the construction phase. This area should be clearly marked, provided with appropriate warning signs, emergency preparedness and response measures, etc.</p>
Month	PAC (kg)	Lime (kg)	Chlorine (kg)																		
January	64,368	1,850	3,122																		
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ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings				Risk Ranking	Corrective action
			April	68,400	0	3,419		
			May	82,500	2,940	3,416		
			June	120,600	9,780	4,192		
			July	153,000	12,900	4,041		
			August	171,000	26,880	3,901		
			September	214,800	40,530	3,650		
			October	199,200	28,800	3,561		
			November	173,700	33,780	3,854		
			December	128,700	25,470	3,708		
			<i>Average</i>	<i>124,239</i>	<i>15,244</i>	<i>3,543</i>		
			<i>Min.</i>	<i>45,900</i>	<i>0</i>	<i>2,603</i>		
			<i>Max.</i>	<i>214,800</i>	<i>40,530</i>	<i>4,192</i>		
			<p>PAC and lime management: PAC and lime are stored in separate storage houses at the WTP for the existing operations (new storage facilities will be constructed for the Project).</p> <p>PAC is currently supplied to the water treatment process using an automatic dosing system. PAC is stored in three composite aboveground storage tanks, each with a storage volume of 3 m³ in a storage house equipped with a locked door and a floor area of 15 m². The floor was tiled but not bunded, and the house was ventilated naturally. No eye wash units were installed near the house. The chemical house was marked "Chemical House" above the</p>					

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			<p>door of the house, in Vietnamese. The chemical house is located approximately 30 m to the north east of the administration building.</p> <p>Lime powder packaged in nylon bags of 30 kg each is stored in a locked storage house with a concrete floor area of 10 m². The lime powder storage house was ventilated naturally and was close to the lime mixing tank at the northeast portion of the WTP. Lime is manually applied to the water treatment process. No eye wash was installed near the house. No warning or safety signs were observed outside of the lime house. This house is located in the northern portion of the WTP.</p> <p>Chlorine management:</p> <p><u>Chlorine storage:</u> Chlorine gas is used as a water treatment chemical at both the WTP and the Intake Station.</p> <p>At the WTP, one existing chlorine storage house with a floor area of 70 m² is present. A new chlorine storage house with a floor area of 70 m² will be built by converting an existing building immediately adjacent to the existing chlorine storage house to accommodate the increase in chlorine gas use associated with the Project. During the three-day site visit, two visits were made to the existing chlorine storage house. During the first visit to the existing chlorine house at the WTP (on the first day of the three-day site visit), 11 cylinders of chlorine gas were identified in the chlorine storage house. Nine of them had a capacity of 900 kg chlorine gas, whilst the other two cylinders were of 450 kg chlorine gas storage capacity. During the second visit to the chlorine house (on</p>		

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			<p>the third day of the site visit), three cylinders of chlorine gas were in the existing chlorine storage house. BIWASE reported that six of the 11 cylinders were empty and had been returned to the supplier, whilst two of the cylinders were meant to be returned to another water treatment plant of BIWASE in Ben Cat District. Based on the observations, the current chlorine management at the WTP does not appear to impose a maximum allowable chlorine gas stored on-site. In accordance with the June 2020 EIA, the existing WTP is expected to house four cylinders of chlorine gas (900 kg per cylinder), equivalent to a maximum quantity of 3,600 kg of chlorine gas. For the expansion Project, an additional cylinder of chlorine gas of 900 kg would be required according to the June 2020 EIA.</p> <p>At the Intake Station, there are two chlorine storage houses, namely the new one for the Project and the previously existing one. The new chlorine storage house at the Intake Station was not in use at the time of the site visit, as equipment was being installed at the new chlorine storage house. The existing chlorine storage house has been in operation since 2008. During the site visit, two chlorine gas cylinders (including one of 900 kg and another of 450 kg capacity) were identified in the existing chlorine storage house. According to BIWASE, during the post-expansion operation of the Intake Station, two 900 kg cylinders (totally 1,800 kg) of chlorine would be expected to be stored on-site in total at the Intake Station.</p> <p><i>Emergency Preparedness and Response:</i> During the site visit, no warning signs or marks were identified inside or outside any of the chlorine houses at both the WTP and at the Intake Station. No Emergency Response Plans (ERPs) specific to chlorine management and scenarios of</p>		

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			<p>chlorine gas leak were available or are known to have been developed by BIWASE.</p> <p>Further details in terms of chlorine-related emergency preparedness and response are provided below:</p> <p><u>Chlorine gas leak detection:</u> Based on information provided by BIWASE, the existing chlorine houses (not for the Project) at both the WTP and Intake Station are equipped with a chlorine gas detection system that is connected with a warning system, including a warning light and an alarm on the walls of the chlorine houses. The gas detector is reportedly set up to detect a chlorine gas leak and activate the warning system whenever the concentration of chlorine gas in the chlorine house reaches 1 part per million (ppm) or above. This 1 ppm threshold is in agreement with the detection concentration range recommended in <i>Safety Advice for Bulk Chlorine Installations</i> prepared by UK Health and Safety Executive.</p> <p>At the WTP, the chlorine gas leakage detection system is reportedly tested and maintained by BIWASE in-house operators once a month, according to verbal information provided by BIWASE's operators. However, no such records were available. In addition, no records are available to indicate that the chlorine gas detection system at the Intake Station has been inspected or tested by a competent and qualified third party since its installation in 2008.</p> <p>It is noteworthy to mention that, during the site visit, the site assessors interviewed various staff on-site at the WTP and enquired about any knowledge or awareness of hearing or seeing a chlorine gas warning alarm or light. None of the interviewed staff working in the administration building reported ever hearing or seeing a chlorine gas</p>		

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			<p>alarm or warning light. The site assessors also interviewed members of surrounding communities of such knowledge or awareness. None of the interviewed surrounding neighbours reported any knowledge or awareness of a warning alarm or communication from the WTP. Based on the information currently available, there is insufficient evidence to demonstrate the effective design, installation and maintenance of the chlorine gas leak detection and alarm systems at both the WTP and the Intake Station.</p> <p><i>Chlorine neutralisation system:</i> At the existing chlorine storage house at the WTP, a chlorine neutralisation system has been installed since its initial establishment in 2008. However, the existing chlorine storage house at the Intake Station is not equipped with any neutralisation system. A chlorine neutralisation system will be installed at both of the new chlorine storage houses (one at the WTP and the other at the Intake Station). It was reported that the design and use of the neutralisation systems at the new chlorine storage houses will be similar to that of the existing one at the WTP (design details and specifications have not been made available in the Audit).</p> <p>According to information provided by BIWASE, in the absence of any documented procedure, the existing neutralisation system at the WTP is equipped with a turbo blower and a storage tank of sodium hydroxide (NaOH) solution, which are considered part of the chlorine gas neutralisation system. The blower is connected to the chlorine gas leak detector. In the event of a detected chlorine gas leak, the blower will be activated by the chlorine gas detection system, and the blower will then capture and direct any leaked chlorine gas in the chlorine storage house to the neutralisation system. The turbo</p>		

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			<p>blower has a designed maximum capacity of 2 m³/s. According to verbal information collected by the site assessors during the site visit, maintenance and inspection of the neutralisation system was conducted monthly by the WTP's operators, and this inspection included examination of the blower by listening to the sound of the blower, visual inspection of the blower belt, visual inspection of the valves and visual inspection of the NaOH holding tank. No issues had been identified or reported by BIWASE thus far. It is also understood that the inspection of the blower, which was installed in 2008, involved switching the blower on to ensure it was able to operate. However, no air flow measurement has been conducted as part of the inspection to ensure the blower provides sufficient air exchange rate in the chlorine storage house. There is no backup blower available at the chlorine storage house at the WTP. Currently, no documented evidence is available to confirm that the blower continues to provide a sufficient air exchange rate with respect to the total volume of the chlorine storage house or that the blower has a sufficient capacity to divert any leaked chlorine gas to the neutralisation system in an efficient manner since its installation, or that the maintenance regime is sufficient.</p> <p>Based on a document provided by BIWASE (undated), which appears to show a calculation of a chlorine gas neutralisation capacity, the neutralisation system at the WTP is said to have a capacity of 1,800 kg of chlorine gas (equivalent to two 900 kg cylinders). Based on the above observations, the amount of chlorine gas stored in the existing chlorine storage house at the WTP would significantly exceed the neutralisation system capacity currently available at the WTP. In an unlikely event of a chlorine gas leak, this is potentially a significant H&S</p>		

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			<p>concern to both the staff on-site as well as surrounding community members.</p> <p><i>Chlorine management training:</i> An interview with two chlorine storage house operators at the WTP was held during the site visit. They informed that they received training on chlorine management and safe use of chlorine gas delivered by a chlorine supplier (Bien Hoa Chemical Plant – the Branch of South Basic Chemicals Joint Stock Company) last year, i.e., in 2019. However, no records of this training were available for review or provided by BIWASE. BIWASE provided a guideline on chlorine management and safe use written in Vietnamese by the said supplier.</p> <p><i>Buffer distance:</i> As mentioned above, post Phase 1 expansion, an additional chlorine storage house of a floor area of 70 m² would be built immediately adjacent to the existing chlorine house at the WTP. Based on the design, a new chlorine neutralisation with the same capacity of 1,800 kg of chlorine gas will be built adjacent to the existing one. Based on observations made on-site, the existing chlorine storage house is located approximately 130 m from the administration building, which houses approximately 50 BIWASE employees, and approximately 220 m to the closest residential households located outside the west entrance of the WTP.</p> <p>At the Intake Station, the existing chlorine house is under 100 m to the office area and 200 m to the closest households who are located across the Dong Nai River.</p> <p>According to QCVN 07-1: 2016/BXD National Technical Regulations – Technical Infrastructure Works Water Supply Works, no buffer distance between a chlorine storage facility and a sensitive receptor is provided.</p>		

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			<p>However, according to TCXDVN 33:2006 Water Supply – Distribution System and Facilities Design Standard, it is <i>recommended</i> that a buffer distance of 300 m is provided from chlorine storage facilities to residential households. Whilst it is recognised that the buffer distance does not appear to be legally mandatory in Viet Nam, the buffer distance between the chlorine storage house and any sensitive receptors should be maximised, as far as practically possible, in conjunction with the implementation of a robust emergency preparedness and response plan (including detection equipment and neutralising capacity) that is commensurate with the risks and impacts associated with chlorine gas storage, handling and use.</p> <p><u>PPE and other emergency response provisions for chlorine gas storage and use:</u> Based on observations during the site visit, a respirator with filter cartridges was identified in a shelf on the wall inside the existing chlorine house of the Intake Station and a few respirators in a storage shelf on the wall outside of the existing chlorine house at the WTP. According to verbal information provided by BIWASE, these respirators would only be used during the chlorine gas leakage detection testing or chlorine gas cylinder change. The respirators provided at the WTP had reportedly been used since the starting operation of the existing chlorine storage house since 2008. However, the respirators did not appear to have been used or be assigned to specific users as they would be considered personal PPE. In addition, it is unlikely that the respirators' filter cartridges would still be effective if they had been in use since 2008. No fit testing for the use of these respirators is understood to have been conducted.</p>		

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			<p>The respirator at the Intake Station was found in its original unopened packaging. Therefore, it is unclear whether a previous respirator was used in the past on a monthly basis for chlorine gas leak testing and cylinder change at the WTP and the Intake Station.</p> <p>No eye wash and no emergency showers were provided in the area, near the chlorine houses or at the WTP and the Intake Station. No eye wash bottles were provided in the first aid kit sighted by the site assessors.</p> <p>Based on the above, there is a need to ensure appropriate PPE and other emergency response provisions are provided in the vicinity of chlorine gas storage and use. There should also be training around appropriate storage, use and maintenance of PPE and other emergency response provisions, i.e., maintenance of eye washes.</p> <p><u>Transportation of chlorine gas:</u> Chlorine gas is transported by a chlorine gas supplier (Bien Hoa Chemical Plant – the Branch of South Basic Chemicals Joint Stock Company) twice a month to the WTP. Based on information provided by BIWASE, post Phase 1 expansion, the frequency of chlorine gas delivery is monthly, which is the same as that for the existing operations, whilst the quantity of chlorine gas transported each delivery and stored on-site would likely double. In other words, chlorine gas would be transported to the WTP likely at an average of ~7,000 kg per month (based on the average monthly chlorine gas use of 3,543 kg per month in 2019). However, this information is inconsistent with the chlorine gas usage documented in the June 2020 EIA where it reported the need for only one additional cylinder of chlorine gas for the expansion Project.</p>		

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			<p>According to BIWASE, there is currently no traffic management plan in place for chlorine management, as chlorine gas transportation is considered the responsibility of the chlorine gas supplier.</p> <p><i>Summary:</i> As the main water treatment chemicals used at the WTP currently (and post-expansion) are PAC, lime and chlorine, as well as some chemicals used in the laboratory setting for water quality testing, significant use of other chemicals and hazardous materials is expected to be limited given that the nature of its activity is to supply clean water. In the absence of documented environmental monitoring information and a robust hazardous materials management, as a conservative assessment, the risks associated with unanticipated environmental impacts is considered high.</p> <p>Based on the existing hazardous materials management measures available at the WTP and the Intake Station and the related emergency preparedness and response, it is critical that a full review of its chlorine management currently and for the future (this should include the expansion Project and, where possible, Phase 2 or be updated when Phase 2 information is available/incorporated into the design of Phase 2) is conducted as soon as practically possible to identify areas for improvement. This review may include a workshop, a hazard assessment, such as in the form of a hazard and operability study (HAZOP), and/or modelling of chlorine gas release scenarios, to assess potential hazards and necessary mitigation measures (both preventive and responsive mitigation measures including preventative maintenance and inspection regimes) associated with transport, storage, handling and use of chlorine gas at the WTP and the Intake Station given the proximity of the</p>		

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			<p>chlorine storage houses to the administration building as well as surrounding communities. In addition, as the Intake Station is situated immediately adjacent to the Dong Nai River, the review should also consider robust pollution preventive measures at all times to prevent accidental release of harmful materials, including chlorine gas management, into the river.</p> <p>The mitigation hierarchy should be applied which would be expected to largely focus on the technical measures that can be put in place to render the risk as low as reasonably possible (such as detection, calibration of testing, neutralising systems, preventative maintenance regimes, qualified technicians, community alarms, etc.).</p> <p>According to a consultant engaged by ADB to conduct a review of the chlorine management of Tan Hiep WTP based on a review of this draft Audit report, the following recommendations in relation to chlorinator are proposed:</p> <ul style="list-style-type: none"> • An information and decision-making session be held with BIWASE management entitled water supply disinfection fundamentals and the use and management of chlorine gas disinfection during which a high-level scope of works would be fashioned; • BIWASE's requirements and specifications be prepared which detail a scope of works, standards and specifications required as instructions for a detailed designer; • A plan for the strengthening of BIWASE work practices (including documentation) be prepared, ready for implementation by a design/construction contractor or independently by another service provider. Ideally the strengthening plan would be delivered during the works commissioning phase; and 		

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			<ul style="list-style-type: none"> The Project moves to the detailed design stage. A hold point is put on the submission of detailed design to enable it to be reviewed by an employer's representative. <p>It is recognised that the chlorine gas management review, be it via a workshop, a HAZOP, or a design review and update, could take some time to complete. Whilst the chlorine gas review process is being developed, at the minimum, the following mitigation measures should be considered and implemented as soon as possible:</p> <ul style="list-style-type: none"> Imposing a maximum quantity of chlorine gas stored both at the WTP and the Intake Station at all times; Inspection of the chlorine gas leakage detection and response system (including the chlorine gas detection system, the blower, and the neutralisation system) by a qualified, and preferably certified, independent third party; Provision of appropriate PPE for the handling and storage of chlorine gas cylinders and in the event of a chlorine gas related emergency scenario; and Development and implementation of an emergency preparedness and response plan for a chlorine gas leak scenario, including elements of community H&S, such as emergency drill involving surrounding community members. <p>Community health and safety associated with chlorine gas management is further discussed below.</p>		

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			<p><i>During the construction phase of the Project</i></p> <p>During the site visit, no significant volumes of hazardous materials or significant volume of chemicals were observed within the construction site area for the Project other than seven oxygen gas cylinders at the construction site. The cylinders were not clearly labelled or secured to any anchor point or stored at a designated gas cylinder storage area on-site for construction use. At the time of the site visit, no petroleum products, paints or solvents were identified on-site. However, the use of small quantities of these products are anticipated during the construction of the Project. As such, it is recommended that a chemical and hazardous materials management should also be developed, implemented and incorporated as part of the C-ESMP. Based on the review of the C-ESMP, very limited information related to hazardous materials management is available. As mentioned above, it is recognised that the review and update process of the C-ESMP may take at least two to three months. In view of the construction completion timeline at the end of 2020, the appointment of a qualified and trained construction EHS or E&S officer is considered an effective measure to ensure E&S measures are implemented during the construction phase in line with the C-ESMP and applicable and relevant EHS measures in the WBG EHS Guidelines.</p>		
g	<p><i>Pesticide Use and Management</i></p>	<p>Environmental Safeguard, Policy Principle 9</p> <p>Law on Chemicals (06/2007/QH12)</p>	<p>No documented information on pesticide use and management has been provided by BIWASE. BIWASE also confirmed that pesticides and herbicides are not used at the WTP or at the Intake Station, currently or will be used for the Project.</p>	Low	None at this point.

ADB's Safeguard Ref	Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		Decree 113/2017/ND-CP guiding the implementation of the Law on Chemicals Circular 32/2017/TT-BCT guiding the implementation of the Law on Chemicals and Decree 113/2017/ND-CP			
h	<i>Greenhouse Gas Emissions</i>	Environmental Safeguard, Policy Principle 9 Circular 47/2011/TTLT-BCT-BTNMT	No documented information on GHG emissions has been identified in the June 2020 EIA, nor provided by BIWASE. Currently BIWASE does not compile information related to GHG emissions. Based on the nature of the WTP's operations, it is unlikely that the Project generates a significant quantity of GHG.	Low	None at this point.
9 Health and Safety					
a	<i>Worker Health & Safety</i> Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Under the Social Protection Strategy, it recommends the project proponent to provide safe and	Environmental Safeguard, Policy Principle 10 Social Protection Strategy	<u>During the construction phase of the Project</u> In the three monthly construction progress reports from February to April 2020, prepared by the WTP Contractor, no incidents and accidents were reported. No H&S concerns or issues were raised. However, during the site visit, a number of OHS issues were observed on-site as follows: (i) inadequate provision of PPE – workers wore a safety helmet and shoes but they did not have fall arrest harnesses whilst working at height; and (ii) a lack of barricades and warning signs around excavated areas. These observations were not noted in the monthly construction progress reports as H&S findings.	High	BIWASE should review and update the overall general and occupational H&S management at the WTP and the Intake Station (including for the Project). Some of the more immediate aspects to be reviewed and updated include: <ul style="list-style-type: none"> Emergency preparedness and response associated with chlorine gas leak,

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	<p>healthy working environment for its employees as well as its contractors/ subcontractors and comply with the national labour laws and take measures to comply with the core labour standards. The ADB SPS mandate that the identified OHS issues must be identified, assessed, and addressed in an EIA for proposed projects.</p>		<p>At the WTP construction site, a designated full-time EHS Officer has been appointed to be responsible for EHS matters who is also Technical Officer of the Project. Although it is not uncommon for personnel to take on multiple roles and responsibilities in a construction project, there is a need to ensure that the personnel are qualified and have been given appropriate training to fulfil their roles. Based on observations made during the site visit, limited evidence is available to demonstrate the implementation of a robust H&S management system (i.e., C-ESMP) and its surveillance by the EHS Officer/Technical Officer of the WTP Contractor.</p> <p>During the site visit, it was observed that a worker (a security guard) from the construction project was residing on-site in a temporary shelter at the WTP. He has reportedly been residing on-site since February 2020. He was provided with water, electricity and other basic amenities, including sanitary facilities at the WTP. Given that this worker resides alone at the construction site as a contractor staff member, in addition to basic necessities, appropriate training in terms of emergency preparedness and response should be provided to him along with emergency response provisions, such as a torch light for use at night and emergency contact numbers in the event he requires support.</p> <p><u>During the operational phase of the WTP</u></p> <p><i>Incidents and Accidents</i></p> <p>According to BIWASE, Tan Hiep WTP has not had any incidents and accidents since its establishment in 2008. No H&S concerns were reported or raised during IBIS' teleconference interviews with representatives of BIWASE on 15th April 2020, and none were reported during the site</p>		<p>including the development and implementation of an ERP and other measures for chlorine gas leak scenarios etc., as noted above in <i>Hazardous Materials Management</i> (this should also include Community Health and Safety; please see further below);</p> <ul style="list-style-type: none"> • Development and implementation of an ERP that covers other hazards and emergency scenarios and the operations of the WTP and the Intake Station; • Designation of appropriately qualified personnel to oversee workplace (construction) H&S; • Selection, use, training and maintenance of PPE, particularly for those required to be used during an emergency situation; • Establishment of a competent and appropriately trained emergency response

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			<p>visit in May 2020. As such, no records on H&S incidents and accidents or related investigation reports have been made or prepared by BIWASE.</p> <p><i>Hazardous Activities and Permit-to-work System</i></p> <p>Based on verbal information provided by BIWASE and observations made on-site, a number of hazardous operations are expected to take place at the WTP during its operational phase, and these activities include:</p> <ul style="list-style-type: none"> • Entry to confined space, including water tanks; • Electrical work; • Work in areas with elevated noise exposure; and • Work in hazardous areas with potential chemical exposure, including chlorine gas management. <p>BIWASE reported no routine work at height at the WTP. No evidence was identified to indicate that a permit-to-work system has been developed at the WTP or at the Intake Station. As such, there is no formal system in place to manage the abovementioned high risk activities on-site. For instance, no hazard warnings were seen around areas with elevated noise exposure during the site walk near the pump houses.</p> <p><i>PPE Provision and Use</i></p> <p>Below is a list of general PPE required whilst operating at the WTP:</p>		<p>team, including certified first aiders.</p> <p>In accordance with the roles and responsibilities of the staff, training covering the above areas should be provided to all staff members at the WTP and the Intake Station as soon as practically possible.</p>

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			<ul style="list-style-type: none"> • Safety shoes; • Life vests (when working near, or over, water); • Gloves and face masks for general use in the laboratory; and • Respirators when handling chlorine. <p>In general, all workers are required to wear safety shoes whilst working at the WTP and Intake Station. This is consistent with observations made during the site visit.</p> <p>Life vests are used by workers when cleaning water basins at the WTP. These basins generally have a depth of about 3.5 m. The interviewed workers informed that the cleaning process was typically carried out by a team of two members for operational and safety reasons. The basin would first be drained, and then one worker would enter the basin wearing a life vest, whilst the other would work outside the basin to help remove sludge and waste collected from the cleaning process. During the site visit, no basin entry or basin cleaning activities were observed.</p> <p>As mentioned above under chlorine gas management, respirators with filter cartridges are reportedly used during chlorine gas exchange, detection sensor testing, and in case of chlorine gas leak. The respirators are reportedly not used for other daily operational activities in the chlorine house at the WTP. Two technical officers are assigned to the operations of the existing chlorine storage house at the WTP and two operators at the Intake Station. It was reported that they were trained on chlorine gas safety by the chlorine gas supplier (Bien Hoa Chemical Plant – the Branch of South Basic Chemicals Joint Stock Company) usually every two years. However, no certificates or training records related to this chlorine gas safety training</p>		

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			<p>were available. Instead, safety guidance on the use of chlorine developed by the supplier was available.</p> <p>As mentioned above, the respirators were kept inside the existing chlorine house at the Intake Station and outside on the wall of the existing chlorine house in the WTP. In the event of a chlorine gas leak at the Intake Station, the first responder would need to enter the chlorine gas house first before getting access to any protective equipment. Furthermore, the respirators at the WTP did not appear to be well maintained, and the users of the respirators did not receive any fit test to ensure that the respirators would be effective in protecting the users in the event of a chlorine gas leak. In addition, no lung function tests are known to have been undertaken by the users of the respirators.</p> <p>Based on information collected during the site visit, no hearing protection PPE is available at the WTP. Based on observations made during the site visit, high noise levels are present on-site e.g. in the pump houses. No noise mapping has been carried out at the WTP or Intake Station to determine whether the noise levels would reach or exceed the occupational exposure threshold of 85 dB. In the event the noise levels inside the pump houses or any area within the operational sites is confirmed to be elevated, an occupational noise exposure management program should be developed. This may or may not include a hearing conservation program depending on the engineering control measures available to eliminate or reduce the noise exposure level.</p>		

H&S Training

According to information provided by BIWASE, the Training Centre of BIWASE prepares a yearly training plan for all BIWASE staff, including H&S training courses. According to the training plan for 2019, a training was provided on firefighting and prevention, occupational safety and working sanitation for 1,000 workers in BIWASE's various business units, including the staff of the WTP. The workers would also participate in emergency drills organised by the Training Centre of BIWASE. Specifically, from the WTP and Intake Station, a total of 46 participants attended the abovesaid training in 2019. In addition, 28 members of the staff at the WTP received certificates of professional training in fire prevention and firefighting issued by Binh Duong Police Department of Fire Prevention and Firefighting on 16th June 2017. In addition to fire prevention and firefighting related training, staff at the WTP should also receive training on emergency preparedness and response associated with chlorine gas leak. Staff who are assigned to manage chlorine gas and be members of the first responders should also receive training on the use of respirators, activation and response to the chlorine gas leakage warning system, and emergency response to chlorine gas leakage.

Medical Surveillance and Occupational H&S Medical Examination

Staff of BIWASE reportedly undergo annual general medical examinations, which includes bodily functions testing, lung x-ray, eye sight and hearing tests, according to information collected during an interview with a member of BIWASE staff. No occupational H&S medication examinations are known to be carried out for any specific occupational H&S exposures.

Emergency Preparedness and Response

In addition to the emergency preparedness and response associated with chlorine gas management, the following observations were made during the site visit:

First aid and first aiders: A first aid box was sighted during the site visit. The first aid box was equipped with first aid supplies, including cotton, bandages, antiseptic, saline solution, and some common oral medication for common conditions, such as colds and stomach discomfort. In general, the provision of oral medication in the first aid box is not recommended due to the potential risk associated with medication overdose/allergy.

Currently, no certified first aiders are present at the WTP or the Intake Station. However, it was said that some officers at the WTP had received first aid training provided by the Training Centre of BIWASE. However, no relevant records were provided. As a best management practice, certified and trained first aiders and other first responders should be prominently identified within the WTP, i.e., in the ERP or H&S notice board on-site.

Firefighting and emergency response: The WTP received an official letter on 16th April 2019 from the Binh Duong Police Department of Fire Prevention and Firefighting to inform that the design of the water supply system for firefighting system in the additional WTP was in general compliance with TCVN 6397-1998 on Fire Protection Equipment – Fire Hydrant – Technical Requirements.

Based on verbal information provided by BIWASE, it conducts annual emergency drills, which reportedly cover fire safety and chlorine leakage response. The last emergency drill was conducted in December 2019, and it was reportedly participated by all BIWASE staff at the WTP.

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			<p>With regards to ERPs, the currently available ERP only provides emergency response in the event of a fire incident. Other hazards or disastrous scenarios, such as typhoon and chlorine gas leak, are not included or mentioned in the ERP. In the ERP, no information is available on any emergency contacts of any BIWASE personnel, and no emergency assembly point was indicated in the ERP (and none is known to have been designated). Although 28 members of the WTP have received certificates for attending firefighting training, no emergency response team has been established at the WTP and the Intake Station.</p> <p>In terms of firefighting equipment, portable fire extinguishers are provided in buildings and storage facilities on-site within the WTP and at the Intake Station, as well as a fire alarm system at the WTP and the Intake Station. It was reported an emergency drill on firefighting and evacuation was held annually by the local fire department. However, no documented evidence was provided on the annual drill event.</p> <p>BIWASE reported no previous fires or significant emergency incidents historically at the WTP and Intake Station.</p> <p><i>Worker H&S Summary</i></p> <p>Based on the above observations and information provided by BIWASE, there is a need to review and update the overall general and occupational H&S management at the WTP and the Intake Station. However, some of the more immediate aspects to be reviewed and updated include:</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<ul style="list-style-type: none"> • Emergency preparedness and response associated with chlorine gas leaks, including the development and implementation of an ERP and other measures for chlorine gas leak scenarios etc., as noted above in <i>Hazardous Materials Management</i> (this should also include <i>Community Health and Safety</i>; please see further below); • Development and implementation of an ERP that covers other hazards and emergency scenarios at the operations of the WTP and the Intake Station; • Designation of appropriately qualified personnel to oversee worker health & safety; • Selection, use, training and maintenance of PPE, particularly for those required to be used during an emergency situation; and • Establishment of a competent and appropriately trained emergency response team, including certified first aiders. <p>Training covering the above areas should be provided to all staff members at the WTP and the Intake Station as soon as practically possible, and the relevant records should be maintained.</p>		
B	<p><i>Community Health & Safety</i></p> <p>Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimise,</p>	<p>Environmental Safeguard, Policy Principle 10</p> <p>Decree No. 102/2017/ND-CP on registration of security measures</p>	<p>Community H&S can be affected by the implementation of the Project during the construction and operational phases according to the June 2020 EIA.</p> <p>According to the June 2020 EIA, risks to community H&S during the construction phase included:</p> <p>(i) Traffic accidents during installation of transmission pipelines along existing roads;</p>	High	<p>BIWASE should conduct a hazard assessment or a review that evaluates the hazards associated with not only storage and use of chlorine gas on-site but also transport of chlorine gas along public roads to the WTP and the Intake Station.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	<p>adverse impacts and risks to the health and safety of local communities.</p>		<p>(ii) Influx of immigrant workers mobilised by contractors causing social conflicts with local people; and</p> <p>(iii) Nuisance and health issues related to noise, dust, wastewater and solid waste as a result of construction activities.</p> <p>According to information provided by BIWASE, no H&S concerns or issues have been raised by external stakeholders, including surrounding communities. No heavy construction vehicular traffic was observed during the site visit. No obvious community H&S concerns were identified by the site assessors at the time of the site visit.</p> <p>During the operational phase of the Project (and the WTP as a whole), potential community H&S risks were expected to relate to:</p> <p>(i) Hazards associated with chlorine gas leakage and transportation; and</p> <p>(ii) Degradation of supply water quality.</p> <p>Based on information collected during the course of the Audit, it is understood that limited emergency preparedness and response measures have been established to minimise potential impacts of chlorine gas leakage and H&S risks to the community. Although emergency drills were reportedly held regularly at the WTP, no emergency preparedness and response plan, including members of the surrounding community, has been developed. According to BIWASE, the nearest household is located approximately 100 m west from the perimeter of the WTP, approximately 200 m from the existing chlorine storage house.</p>		<p>BIWASE should also establish a trained and qualified emergency response team at the WTP and the Intake Station, who can then coordinate with the respective local communities to disseminate appropriate emergency preparedness and response information and carry out a chlorine gas leak emergency drill with the communities as soon as practically possible. Where appropriate, these can be implemented in collaboration with the local fire department or local emergency response units.</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>It was also verbally confirmed by BIWASE that no HAZOP or other hazard assessments have been conducted thus far for the storage of chlorine gas at the WTP and the Intake Station. At the WTP, the current maximum chlorine storage on-site is assumed to be 1,800 kg, in accordance with the neutralisation capacity provided by BIWASE. As the WTP undergoes this expansion and the future planned expansion under Phase 2, there will be an increase in the storage and use of gaseous chlorine on-site. In addition to the risks associated with storage and use of chlorine gas on-site, transportation of chlorine gas also represents a potential community H&S concern and can potentially lead to adverse H&S impacts.</p> <p>According to BIWASE, chlorine gas is transported and delivered to the WTP twice a month by the supplier (Bien Hoa Chemical Plant – the Branch of South Basic Chemicals Joint Stock Company). Each delivery currently brings in approximately 1,800 kg of chlorine. Post-expansion, it is said that the volume to be delivered each time will be doubled to approximately 3,600 kg. However, according to the June 2020 EIA, only an additional one cylinder of chlorine gas of 900kg would be required for the expansion Project. This might be due to the use of a new chlorine application technology. However, there is a need to ensure that a maximum chlorine gas storage threshold is imposed at all times.</p> <p>As such, from a community H&S perspective, there is a need to conduct a hazard assessment or a review that evaluates the hazards associated with not only storage and use of chlorine gas on-site but also transport of chlorine gas along public roads to the WTP and the Intake Station. Where the recommended buffer distance of 300 m cannot be met, the findings from the hazard assessment</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>or the review (i.e., with modelling of release scenarios) should inform the design and implementation of necessary preventive and responsive mitigation measures associated with chlorine gas management.</p> <p>Recognising that the proposed hazard assessment/review and implementation of the mitigation measures is unlikely to be completed in a short timeframe, it is recommended that a trained and qualified emergency response team is established at the WTP and the Intake Station, who can then coordinate with the respective local communities to disseminate appropriate emergency preparedness and response information and carry out an chlorine gas leak emergency drill with the communities as soon as practically possible. Where appropriate, these can be implemented in collaboration with the local fire department or local emergency response units.</p>		
10 Physical Cultural Resources					
	<p>Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach</p>	<p>Environmental Safeguard, Policy Principle 11</p> <p>Law on Cultural Heritages (28/2001/QH10) and Amendment (32/2009/QH12)</p>	<p>The Project sites are situated in urbanised and agricultural areas. No physical cultural structures were identified within the Project area. According to Binh Duong Department of cultural, sport and tourism, there are 13 national cultural and history areas within Binh Duong Province, in which only one area "Cu Lao Rua" is in Tay Uyen Town, and it is approximately 2 km east from the Intake Station.</p> <p>Based on a review on readily available historical aerial imagery going back to 2007 (prior to development of the Project sites), there did not appear to be any obvious features of tangible cultural heritage. At this stage,</p>	Low	None at this point.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	<p>for materials that may be discovered during project implementation.</p>		<p>impacts on physical cultural resources is not considered to be an issue.</p> <p>According to BIWASE, during land clearing for the Project, no physical cultural features were identified. Since all land clearance has been completed, the risk of encountering any physical cultural features is now low.</p> <p>As a best management practice, BIWASE should establish a Chance Finds Procedure that serves as a project-specific procedure that outlines what will happen if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation in the future. However, understanding all land clearing activities have been completed at the time of the site visit, the Chance Finds Procedure may have become optional.</p>		

4.1.1 LABOUR CONDITIONS AND GENDER DIMENSIONS

At the time of the site visit, BIWASE at a group level reported their total number of official employees was 1,105 people, of which 254 were female and 851.

In the absence of additional labour related data being available during the site visit, the following table was extracted from an "Organisational Structure" document for 2019 at the group level.

NO	LEVEL	NUMBER OF STAFF	RATIO (%)
<i>I</i>	<i>Classification by gender</i>	<i>1,038</i>	<i>100%</i>
1	Male	791	76,2%
2	Female	247	23,8%
<i>II</i>	<i>Classification by level</i>	<i>1,038</i>	<i>100%</i>
1	University and postgraduate	216	20,8%
2	College, intermediate and elementary level	267	25,7%
3	Technical workers receive vocational training	555	53,4%
<i>III</i>	<i>Classification according to labor contracts</i>	<i>1,038</i>	<i>100%</i>
1	Permanent contract	518	49,95%
2	Contract term 1-3 years	509	49,04%
3	Contract of 6 months to less than 1 year	11	0,01%

According to BIWASE, formal employment contracts are established for employment of all workers by BIWASE, as required under Vietnamese law. A sample copy of a general labour agreement was provided for review for an employee. The general labour agreement provides general employment and labour policies, including working hours (i.e. Monday – Friday from 7:30am – 11:30am and 13:30pm to 17:00pm; Saturday from 7:30am – 11:30am), policies regarding remuneration, rewards, annual leave and holiday, and working conditions for pregnant women.

A trade union has been established under BIWASE to manage and protect workers' rights. Workers are entitled to register under the collective labour agreement of BIWASE, under which provisions, rules, regulations and rights are incorporated. The collective labour agreement has been submitted to the Department of Labour and Social Affairs for review and approval, as required by law. Additionally, regulations for female workers are specifically mentioned in the collective labour agreement and will be implemented according to *Labour Code 2012 and Decree No. 85/2015 / ND-CP* dated 1st October, 2015, which also covers elements of female workers' entitlements, benefits and sexual harassment policy. Whilst no sexual harassment policy has been formally developed or established by BIWASE,

BIWASE indicated that prohibition of sexual harassment is regularly communicated to all workers within BIWASE and no sexual harassment cases have ever been raised or reported since the establishment of BIWASE. BIWASE also has its own specific regulations for female employees in compliance with the *Labour Code 2012*.

In the activities of BIWASE it was reported that there is equality in employment, in addition to receiving entitlements as required under Government regulations (e.g. maternity leave). In addition, BIWASE provides additional benefits for female workers who are pregnant, with one month of leave before giving birth on full pay. Direct employees wage range is between VND6,730,000 to VND14,000,000 per month (exclusive of benefits and allowances). The average monthly salary of direct workers is over VND9,000,000 per month and the salary between men and women are equal (equal pay for equal work). These wages are above the legal minimum wage of VND4,400,000 per month in Binh Duong Province in Viet Nam. At water supply branches, female workers are not required to work shifts. Only overtime work for water collection units on Saturdays and Sundays may be required when necessary. For workers carrying out heavy and hazardous work, there is an additional supplement of 10% to 15% of their monthly salary, depending on the nature of the job. BIWASE conducts annual health checks for its employees. Additionally, for operations such as waste treatment and waste water treatment, women are provided with biannual health-checks. For water supply workers who have worked for 10 years or more and for waste treatment and waste water workers who have worked for more than 5 years, BIWASE purchases additional healthcare benefits.

Based on observations conducted during the site visit, no signs or evidence of forced labour, child labour or young workers were identified at the WTP. According to BIWASE, the minimum age of workers employed by BIWASE is 18 years or above. BIWASE also indicated that no adolescent or young workers were employed by BIWASE at a group-wide level.

According to information provided by BIWASE, BIWASE has never had a retrenchment of its staff. Based on currently available documented information, no retrenchment policy or employment termination related policy has been sighted. According to *the Labour Code*, an employer has a legal responsibility to implement labour requirements stipulated in the *Labour Code* in the event of an unilateral termination of employment contract or retrenchment in case of changes in structure, technology or due to economic reasons. Even though the agreement has been reviewed and approved by the responsible governmental department, it is recommended that BIWASE incorporates explicit labour-related conditions in the event of an employment contract termination and retrenchment in both the collective labour agreement and individual employment contracts.

According to the WTP Contractor, most construction workers were considered to be local and recruited from Binh Duong Province, of whom commute daily to the WTP. In addition, at BIWASE's request, contractors must prepare and submit an ESMP, in which related gender issues must be addressed and monitored as well as periodic reporting as detailed below. The contents of the report include E&S issues, labor management, labor regulations, mitigation measures, risk management plans, safety measures, gender issues, child labor and sexual harassment, etc. **Gender issues**

mentioned in the Code of Conduct for contractors that contractors will require workers to comply with include:

- Comply with the relevant provisions of the current laws;
- Do not discriminate on the basis of family status, ethnicity, gender, religion, language, marital status, age, disability or political opinion;
- Proper contact and communication with local community members, showing respect and non-discrimination;
- Prohibit sexual harassment, prohibit the use of abusive language or harassing behaviours, especially for women and children;
- Prohibit acts of violence or exploitation. Prohibit use of money, employment, goods or services to exchange sex, including sex brokers or other forms of humiliation, degrading or abusive conduct; and
- The contractor is responsible for ensuring that all workers (i) receive a copy of the code of conduct, (ii) a clear and meaningful explanation of the requirements of the rules, (iii) a commitment to implement these rules as a condition of a labour contract, and (iv) understand that violating the rules of the code of conducts can lead to serious consequences including termination of the contract and prosecution by law.

Gender issues are addressed in monthly reports on environmental, social, health and safety management practices including:

- Number of female employees, percentage of female employees;
- Gender issues raised by employees and issues have been resolved; and
- Quantity and number of training days on HIV/AIDS, number of trained workers and similar questions on gender issues.

As a best management practice in line with ADB Safeguards, it is recommended that a sexual harassment policy be established by BIWASE.

4.2 ADB SPS INVOLUNTARY RESETTLEMENT SAFEGUARDS

Tan Hiep WTP was initially established in 2008. From 2005 to 2007, BIWASE conducted a survey and prepared a project to carry out land acquisition covering a total land area of 91,771 m². The land area for the construction of the WTP was 76,159 m² belonging to 25 households of Tan Hiep Commune, Tan Uyen District (now referred to as Tan Hiep ward, Tan Uyen town). The remaining 15,612 m² land area was used for the construction of the Intake Station, belonging to 10 households of Uyen Hung Commune, Tan Uyen District (now referred to as Uyen Hung ward, Tan Uyen town). No residential land and homes were understood to have been affected by this land acquisition. The entire land area was classified as agriculture productive land, and no affected households were identified as ethnic minority people. This land acquisition process was completed in 2007, and BIWASE was granted a land use right certificate (LURC) for these land areas in 2008 and 2010. In the context of this Audit, this land area is considered as the existing land of BIWASE.

Between 2017 and 2019, BIWASE undertook the land use rights acquisition for the Phase 2 expansion of the WTP. During the land use rights acquisition process, a total of 43,531.8 m² belonging to 12 households (AHs) were affected. According to information provided by local authorities, as well as the IAHs during the site visit from 18th to 20th May 2020, the land plots at the WTP were mainly used for cultivation of rubber trees at the time of the land acquisition. It should be emphasised that the land involved in this most recent land acquisition process is intended to be used in the Phase 2 expansion of the WTP only, which is located immediately south of the Project. The ADB-related investment items for the Phase 1 expansion of the WTP and the Intake Station will only be carried out in the existing footprint of the WTP and the Intake Station (i.e. the land area acquired in 2007).

In addition, it should also be noted that households located approximately 200 m from the chlorine storage facility outside the west gate of the WTP are not expected to be relocated due to the operations of the WTP. This has also been verbally confirmed by BIWASE during a conference call on the 26th June 2020.

Accordingly, this Project is considered to be Category C in term of Involuntary Resettlement and Indigenous Peoples. Nonetheless, an E&S due diligence assessment relating to involuntary resettlement and indigenous peoples have been conducted for the existing land plots. In addition, an assessment of the newly acquired land for the Phase 2 expansion of the WTP is included in terms of considering social risks associated with the Project.

Below table presents findings associated with Involuntary Resettlement associated with the Project for existing land plots of the WTP.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
1 Screening					
	Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks	<p>Involuntary Resettlement, Policy Principle 1</p> <p>Under the Law on Public Investment No. 49/2014/QH13, project owners must prepare the pre-feasibility and feasibility study reports that mention about assessing on environment, social and finance issues.</p> <p>Under item 4.c of Article 40 of Land Law 2013, the area and location of the land to be recovered for the implementation of socio-economic development projects should be assessed in the district annual land use plans.</p>	<p>Historically, based on the land use needs to build Tan Hiep WTP, BIWASE conducted a survey in 2005 in Tan Uyen district to select locations, according to the following screening criteria:</p> <ul style="list-style-type: none"> • Water source; • Distance from the Intake Station to the WTP; • Avoiding populated locations or residential land/home (i.e., only inclusive of productive land areas); and • Minimise adverse impacts on people from the E&S perspective. <p>After determining the preliminary location, conducting consultation with local authorities and land users/households, the selected location proposal was submitted to the Provincial People's Committee for approval.</p> <p>A total land area of 91,771 m² was acquired for the construction of Tan Hiep WTP and its Intake Station in 2005-2007. The land area for the construction of the WTP was 76,159 m², which belonged to 25 AHs of Tan Hiep ward, Tan Uyen town. The remaining land area was used for the construction of the Intake Station, and</p>	Low	No further action required

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			the area belonged to 10 AHs of Uyen Hung ward, Tan Uyen town. No residential land or homes were affected in the process of the land acquisition. The land area was classified as agricultural productive land. In addition, no AHs were identified as ethnic minorities.		
2 Consultation and Participation					
	Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organisations. Inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs. Pay particular attention to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly, women and children, and Indigenous Peoples, and those without legal title to land, and ensure their participation in consultations. Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. Support the social and cultural institutions of displaced persons and their host population. Where involuntary resettlement impacts and risks are highly complex and sensitive, compensation and resettlement decisions should be preceded by a social preparation phase.	<p>Involuntary Resettlement, Policy Principle 2</p> <p>Under Item 1, Article 43 of Land Law 2013, Agencies which organise the development of land use planning and plans as prescribed in clause 1 and clause 2, Article 42 of the land Law 2013 are responsible for organising the consultations with the public on land use planning and plans</p> <p>Under Item 1, Article 48 of Land Law 2013, The land use planning and plans at national, provincial and district levels must be publicised upon the approval from competent State agencies</p> <p>Under Article 67 of Land Law 2013, between 90-180 days before issuing decision on land recovery, State agencies are required to notify the affected land users about the land recovery (including recovery plan, investigation, survey, measurement and inventory</p>	<p>Public consultation and information disclosure were carried out by the District Compensation, Assistance and Resettlement Board of Tan Uyen district (DCARB) between 2005 and 2007. During the meetings, the DCARB informed to the AHs about the project, notification of land acquisition, detailed measurement survey (DMS) schedule and compensation policies. All of the AHs and representatives of the DCARB, CPCs, Fatherland Front, and villages leaders participated in the meetings.</p> <p>According to information provided by the AHs during the site visit from 18 to 20 May 2020, 100% of the AHs knew about the project implementation through the meetings. They fully understood the project and its compensation policy. All of the AHs also participated in the steps of the land acquisition implementation</p>	Low	BIWASE put the boundary landmark for the household Nguyen Thi Nguyet by 31 st May 2020.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>implemented by DCARB and CPCs, such as public meetings on DMS results and draft compensation plans, etc. Based on information provided by the AHs, no issues were identified regarding public consultation and information disclosure.</p> <p>The survey results showed that there was no separate grievance mechanism for land acquisition activities of the project; however, there was an existing mechanism for resolving all local people's grievances or complaints as regulated by the Government of Viet Nam. Accordingly, the AHs were fully informed about the process and steps to submit and resolve their complaints/grievances in term of land acquisition and resettlement.</p> <p>At the time of site visit in May 2020, all complaints or grievances have been resolved. There are no remaining complaints related to the land acquisition and compensation of the project.</p> <p>However, as reported by an AH (Household Nguyen Thu Nguyet located at Group 1, Area 8, Uyen Hung ward, Tan Uyen town), this AH wanted BIWASE to put the boundary landmark between their land and BIWASE land as she did not know exactly where her remaining land area would sit after the</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			land acquisition. Regarding this, BIWASE informed that the boundary landmark had already been placed after completion of the land acquisition in 2007. However, the landmark was destroyed by an unknown person when this AH was living in Ho Chi Minh City. At the request of the AH, BIWASE committed to put a new boundary landmark by end of May 2020.		
3 Livelihood Restoration					
	<p>Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible.</p>	<p>Involuntary Resettlement, Policy Principle 3</p> <p>Under Item 1, Article 84 of Land Law 2013, households and individuals directly engaged in agricultural production, when the State recovers agricultural land and there is no agricultural land available for compensation, in addition to receiving compensation in cash, they shall be entitled to receive support for training, career change and facilitating job searching</p>	<p>Based on information collected during the site visit and reported by BIWASE, a total of 25 households were affected by the land acquisition for the construction of Tan Hiep WTP and 10 households for the construction of the Intake Station in 2007. All of the affected land area was classified as productive land, including annual crops land and perennial trees land. The total land area acquired was 91,771 m². As such, no physical resettlement was caused as a result of the land acquisition.</p> <p>The site assessors interviewed the AHs and discussed with a representative of DCARB, the AHs were consulted on the compensation price before the compensation policy was approved by Binh Duong PPC. According to the AHs, the</p>	Low	No further action required.

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>compensation price for the affected land and non-land assets were acceptable in comparison with the market price and were higher than other projects in Tan Uyen district at that time.</p> <p>The compensation prices applied to the land acquisition for the construction of the Intake Station was based on Decision No. 84/2006/QĐ-UBND issued by Binh Duong PPC on 31st March 2006 and Decision No. 67/2007/QĐ-UBND issued by Binh Duong PPC on 9th July 2007 for adjustment of some compensation unit prices of affected land and assets regulated in the Decision No. 84/2006/QĐ-UBND.</p> <p>In addition, after the compensation for the affected rubber trees was made to the AHs, the households were allowed to harvest and sell the rubber trees. Therefore, the AHs were able to gain additional compensation through the sale of the rubber trees.</p> <p>The findings also showed that agricultural production served as a source of secondary income for these AHs. The loss of the productive land was therefore not expected to significantly impact livelihood of the AHs and at the time of the assessment, all households had a</p>		

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			stable life and had a better income and living standard than before land acquisition.		
4 Assistance					
	Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required.	Involuntary Resettlement, Policy Principle 4 Under Item 2, Article 83 of Land Law 2013, the support upon land recovery by the State includes: a) Support for stabilising livelihoods and production; b) Support for training, career change and facilitating job searching for cases of the recovery of agricultural land from households and individuals directly engaged in agricultural production or the recovery of land which is a combination between residential land and land for trading and services of households and individuals that have to relocate; c) Support for resettlement in case of land recovery from households, individuals and overseas Vietnamese who have to relocate; d) Other support	As mentioned above, no AHs had to relocate and no residential land/homes were affected by the historical land acquisition for the construction of the WTP and the Intake Station. A total of 35 households were affected through loss of productive land. According to Binh Duong's compensation policy, these AHs were entitled to get the additional assistance detailed as below. For AHs losing perennial tree land (rubber tree plantation) – 25 households affected by land acquisition for the construction of the WTP The AHs were entitled to receive additional assistance in the form of a residential land plot in a new urban area in front of the main entrance of Tan Hiep WTP. As informed by DCARB, a total of 29 residential land plots were allocated to 25 AHs. For AHs losing annual crop land and forest land (10 households affected	Low	No further action required

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
			<p>by land acquisition for the construction of Water intake station)</p> <p>The AHs were entitled additional support in cash calculated based on the agricultural area lost.</p> <p>In addition to the compensation payments required by the PPC, BIWASE also had other support activities for communities, such as livelihood support for the AHs, community engagement activities, and support to improve the transportation system in the area of the WTP. The details are as below:</p> <ul style="list-style-type: none"> • Every year, BIWASE offers gifts to the AHs on Lunar New Year; • BIWASE organises events on important holidays and invites households to participate; • BIWASE contributes to local authorities by organising events, such as War Invalids and Martyrs 'Day (27th July), Vietnamese Teachers' Day (20th November), International Women's Day (1st March) and Vietnamese Women's Day (20th October); and • BIWASE supported Tan Hiep ward to construct a concrete road connecting DH407 road (about> 100m) and build a drainage system. 		
5 Vulnerable Groups					

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	<p>Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. In rural areas provide them with legal and affordable access to land and resources, and in urban areas provide them with appropriate income sources and legal and affordable access to adequate housing.</p>	<p>Involuntary Resettlement, Policy Principle 5</p> <p>Under Item 4, Article 86 of Land Law 2013, For resettled people, in case the amount of compensation/support is not enough to buy the minimum resettlement plot, the State supports the balance.</p> <p>Under Item 3, Article 87 of Land Law 2013, People whose recovered land is located in areas that pose risk to human life (defined in Article 65.1) are entitled to receive compensation, support, resettlement to stabilise livelihoods</p> <p>Under Item1, Article 101 of Land State guarantees to develop policies to facilitate those who are directly involved in agricultural, forestry, aquaculture, salt production and who are lacking the land for production due to change of land use structure and economic structure (Article 26.4). Such households/ individuals shall be granted certificate of land use right, houses and other land-attached assets without having to pay land use fee.</p> <p>Under Article 27 of Land Law 2013, State to develop policies on residential land, land for public activities for ethnic minorities in accordance with customs, traditions, cultural dignity and practical situation and assist ethnic minorities</p>	<p>As informed by DCARB and AHs during the site visit, no AHs were considered as vulnerable households, and no ethnic minority people were presented in the project area.</p>	<p>Low</p>	<p>No further action required</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		directly involved in agricultural production to have land for agricultural production			
6 Negotiated Settlement					
	Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.	Involuntary Resettlement, Policy Principle 6	For the land acquisition held in 2007/2008, compensation policies were negotiated between the AHs and BIWASE, in the presence of commune and DCARB representatives as part of the consultation process.	Low	None at this time
7 Land Rights					
	Ensure that displaced persons without titles to land or any recognisable legal rights to land are eligible for resettlement assistance and compensation for loss of nonland assets.	Involuntary Resettlement, Policy Principle 7 Under item 2, Article 79 of Land Law 2013, for relocating households who are not eligible for compensation with residential land, but have no other place to live, the State sells, leases, provides rent-to-own houses or allocates land with land use fee. Under Article 88 & 92 of Land Law 2013, non-legitimate owners of land-attached assets are not compensated for the non-land assets	As informed by DCARB and the AHs during the site visit, all AHs were eligible to get the compensation and assistance in accordance with regulations of Binh Duong PPC.	Low	None at this point
8 Resettlement Plan					
	Prepare a resettlement plan elaborating on displaced persons' entitlements, the income and livelihood restoration strategy,	Involuntary Resettlement, Policy Principle 8	According to the local Vietnamese regulations, a resettlement plan is not	Low	No further action required

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule.	Article 40 of Land Law 2013, The district-level land use planning and plans will be prepared as annual land use planning.	legally required. As such, no resettlement plan was prepared. However, in accordance to the Vietnamese regulations, a detailed measurement survey (DMS) should be carried out for each AH in which details of affected land area and assets would be quantified and documented. The DMS is used to form the basis of compensation computation in accordance with the approved compensation policy. In the case of this project, a DMS for each AH was prepared by CARB of Tan Uyen town. Compensation was made to the AHs based on the DMS and in accordance with the approved compensation policy in terms of additional financial assistance.		
9 Disclosure					
	Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders. Disclose the final resettlement plan and its updates to affected persons and other stakeholders.	Involuntary Resettlement, Policy Principle 9 Under Item 2, Article 69 of Land Law 2013, the Organisations performing the task of compensation and site clearance are responsible for making plans for compensation, support, and resettlement and coordinate with the People's Committee of the commune where the land is recovered to collect opinions on the plans of compensation, support and resettlement in the form of	Based on information collected during the site visit, many public consultation meetings were held with the AHs between 2005 and 2007. These meetings provided all necessary information of the project and its implementation schedule, compensation policies and consultation about the compensation prices. The interviewed AHs indicated that they had participated the meetings and were aware of the steps of the land	Low	No further action required

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		<p>holding meetings directly with people in the area where the land is recovered, and publicly posting plans for compensation, support and resettlement at the Committee's headquarters commune-level people, common living place of residential areas where land is recovered</p>	<p>acquisition process. They were also provided with the records of their DMS and the corresponding compensation plan.</p>		
10 Involuntary Resettlement					
	<p>Conceive and execute involuntary resettlement as part of a development project or program. Include the full costs of resettlement in the presentation of project's costs and benefits. For a project with significant involuntary resettlement impacts, consider implementing the involuntary resettlement component of the project as a stand-alone operation.</p>	<p>Safeguard Requirement 2: Involuntary Resettlement, section 10 Under Item 1, Article 17 of Decree 47/2014, the compensation and support when the State recovers land to implement investment projects that is decided by the National Assembly on investment policies, the Prime Minister approves the investment policies but this project must move the whole community, affecting the whole life, economy - society, cultural traditions of the community; Land acquisition projects involving many provinces and centrally-run cities are implemented as follows: Ministries and sectors having investment projects shall be responsibility and coordinate with provincial-level People's Committees in the localities where land is recovered, formulate a policy framework on compensation, support, resettlement,</p>	<p>According to the local Vietnamese regulations, a resettlement plan is not legally required. As such, no resettlement plan was prepared. However, the land acquisition planning was integrated into the district annual land-use planning.</p>	<p>Low</p>	<p>No further action required</p>

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
		budget and time-bound implementation schedule for submission to the Prime Minister for approval and must ensure funding for compensation, support and resettlement according to regulations			
11 Implementation					
	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation.	<p>Safeguard Requirement 2: Involuntary Resettlement, section 11</p> <p>Under Item 1, Article 93 of Land Law 2013, Within 30 days after the decision on the land recovery by competent State agencies takes effect, agencies and organisations in charge of compensation must pay compensation and support to people whose land is recovered</p> <p>Under Items 1 & 3 of Land Law 2013, The People's Committees at provincial and district levels are responsible for developing and implementing the resettlement site before conducting the land recovery; and Land recovery can only be conducted after the construction of houses and infrastructure in the resettlement site is completed</p>	<p>As informed by DCARB and the AHs during the site visit, all AHs received the compensation and assistance in full since 2007. There are no pending issues relating to compensation and assistance for the AHs.</p> <p>However, as above mentioned, one household (Household Nguyen Thu Nguyet located at Group 1, Area 8, Uyen Hung ward, Tan Uyen town) informed that she had requested BIWASE to put the boundary landmark so that she could build a fence. BIWASE informed that a boundary landmark had been placed after completion of the land acquisition in 2007. However, the landmark was destroyed when this household was living in Ho Chi Minh City. At the request of the household, BIWASE committed to put a new boundary landmark by the end of May 2020.</p>	Low	BIWASE put the boundary landmark for the household Nguyen Thi Nguyet by 31 st May 2020.
12 Monitoring and Reporting					

Ref	ADB's Safeguard Principles/Requirements	Local Regulatory Requirements and ADB Safeguard Reference	Commentary/ Findings	Risk Ranking	Corrective action
	<p>Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons, and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of resettlement monitoring. Disclose monitoring reports.</p>	<p>Safeguard Requirement 2: Involuntary Resettlement, section 12</p> <p>Under Article 199 of Land Law 2013, empowers citizens to supervise and report on breaches in land management and land use including land recovery, compensation, support and resettlement.</p> <p>Under Article 200 of Land Law 2013, mandates the government to develop a system for monitoring and evaluation on land management and land use including land pricing, land recovery, settlement of disputes, etc. to be sent periodically to the government and the National Assembly</p>	<p>No livelihood restoration monitoring or reporting has been conducted by the Project or BIWASE so far. By law, there is no specific requirement to monitor and evaluate resettlement outcomes and their impacts on the standards of living of displaced persons. For projects with significant impacts, there is also no requirement for engaging an external expert to monitor this.</p> <p>However, according to information provided by BIWASE during the site visit in May 2020, after the completion of the land acquisition, BIWASE's staff maintained contact with the AHs and supported them if needed.</p> <p>At the time of this report preparation, a total of 10 AHs' members have been supported by BIWASE to work directly for BIWASE or Urban Service Area of BIWASE.</p>	<p>Low</p>	<p>No further action required</p>

In addition, as briefly described in the previous section, in order to carry out the Phase 2 expansion of the WTP in the future, BIWASE has conducted an additional land acquisition of a land area of 43,531.8 m² immediately south of the existing land of the WTP. The recent acquisition of the additional 43,531.8 m² land area was conducted without any anticipation of ADB support for the Phase 2 expansion. During the preparation of this report, an assessment of this additional land acquisition was also conducted (although this does not form part of the Project). The key findings of the assessment are provided below:

Screening and Impacts: No formal screening of the Phase 2 expansion project has been conducted in terms of the significance of its involuntary resettlement impacts with corresponding requirements of preparation, implementation and monitoring. The implementation of the land acquisition to expand the WTP is based on Official Letter No. 61/UBND-KTN dated 12th January 2015 of Binh Duong PPC. Initially, a total of 45,139.7 m² from 12 households would be affected by the land acquisition. The total affected land area was later revised to 43,531.8 m² according to Decision No. 4181/QD-UBND, dated 22nd August, 2019 of Binh Duong PPC. All of the affected land was classified as perennial tree land (rubber tree plantations). As such, no physical resettlement was caused as a result of the land acquisition.

Public Consultation and disclosures: Public consultation and information disclosure was carried out by the LFDC of Tan Uyen district in 2017. The LFDC cooperated with Tan Hiep ward to organise the first consultative meeting for disclosure of the notification of land acquisition for Tan Hiep WTP expansion and information regarding to DMS planning, land acquisition process, principles of compensation and assistances on 31st August 2017. All of the affected households and representatives of the LFDC and Tan Hiep ward participated in the consultative meetings. All the contents of public consultative meetings were recorded in minutes. The consulted AHs stated that the provided information was clear, easy to understand, useful and transparent based on information collected during the site visit in May 2020.

DMS process: The cut-off date of DMS was 24th August 2017 based on the notification of the land acquisition issued by Tan Uyen town's People's Committee. The LFDC of Tan Uyen town informed representatives of Tan Hiep ward and each of the AHs about the cut-off date. Accordingly, assets acquired after the cut-off date would not be eligible for compensation and assistance. According to the LFDC, all of the AHs were informed about the planning of DMS and all of them participated in the DMS process. The AHs were provided with DMS self-enumeration forms to fill-up. The form was completed by each household indicating all of the affected lands and assets of the household completed with the signature of the household head. The DMS team of the Tan Uyen LFDC then conducted the DMS to verify the impacts for the households with participations of the heads of the households, village leaders, representatives from Tan Hiep ward and mass organisations. The agreed DMS records received signatures of the affected households and enumerators. 100% of the AHs were provided with a copy of the DMS after signing on the DMS minutes prepared by the LFDC of Tan Uyen. The results of DMS of each of the AHs were then publicly posted at the office of the communes in accordance with the regulations.

Preparation and approval for compensation plans: The compensation plans were calculated for the affected assets with application of decisions on compensation for land, trees, and assets issued by Binh Duong PPC. All AHs received the compensation plans and kept a copy of the compensation plans. The AHs agreed with the compensation policy and the replacement cost for land, structures, crops and trees according to the replacement costs issued by Binh Duong PPC. The compensation unit prices for calculating compensation for the affected land and non-land assets were applied in accordance with decisions of Binh Duong PPC including:

- *Decision No. 51/2014/QD-UBND* dated 18th December 2014 of Binh Duong PPC on the promulgation of regulations on compensation, support and resettlement when the State recovers land in Binh Duong Province;
- *Decision No. 258/QD-UBND* dated 25th January 2018 of Binh Duong PPC on approving the compensation unit price to affected land for the expansion of Tan Hiep WTP in Tan Hiep ward, Tan Uyen district, Binh Duong province; and
- *Decision No. 25/2015/QD-UBND* dated 22nd July 2015 of Binh Duong PPC on the promulgation of compensation unit price for non – land assets when the State recovers land in Binh Duong province.

Payment for compensation and assistance: Based on *Decision No. 3958/QD-UBND* dated 25th July 2018 of the Tan Uyen Town People's Committee on approving the compensation and assistance for households affected by the land acquisition for the Phase 2 expansion of Tan Hiep WTP, the LFDC of Tan Uyen district has made payment to all AHs with a total of VND 117,154,683,650. The compensation was reportedly paid in cash at Tan Hiep Ward office, and no outstanding issues associated with compensation payment were reported.

Assistance and livelihood restoration: Based on information collected during the site visit in May 2020, the agricultural production served as a source of secondary income for these AHs. The loss of the productive land was therefore not expected to significantly impact livelihood of the AHs. However, following the Binh Duong's policies (*Decision No.51/2014/QD-UBND* dated on 18th December 2014 of Binh Duong PPC), in addition to the compensation, the AHs who were directly involved in agriculture production would be entitled to receive financial assistance, assistance for change of job in cash equivalent to three times of the affected land price regulated by the Province for acquired land area. In addition, the affected households would also be provided with a life stabilisation allowance in cash of VND1,000,000 per person for 6 months for households losing from 30% to 70% of their productive land (5 out of 12 AHs) and 12 months for households losing 70% or more of their productive land (5 out of 12 AHs).

Grievance redress mechanism: There is no separate grievance mechanism for the land acquisition activities of the Phase 2 expansion project; however, there is an existing mechanism for resolving all local people's grievances or complaints as regulated by the Government of Viet Nam. Accordingly, affected people are fully informed about the process and steps to submit and resolve their complaints/grievances in term of land acquisition and resettlement. At the time of the site visit, all complaints or grievances had been resolved and the complainant was reportedly satisfied with the

result of his or her complaint. There are understood to be no remaining complaints related to the land acquisition of the Phase 2 expansion project.

Conclusion: The implementation of the compensation and site clearance appears to align with the procedures prescribed by the Government of Viet Nam and *Decision 51/2014/QD-UBND* dated 18th December 2014 of Binh Duong PPC on regulating for implementation of compensation, support and resettlement and implementing process of compensation, support and resettlement when the State acquires land and are generally consistent with ADB principles.

The Phase 2 expansion project's public information has been organised via several public meetings, such as (i) meetings for the disclosure of planning information, project information, and compensation policy; (ii) meetings for the disclosure of compensation prices and draft compensation plan; and (iii) meetings for the disclosure of the approved compensation plan etc.

The application of the compensation policy complies with the provisions of the Government of Viet Nam and the Binh Duong PPC. The grievance redress mechanism was in place and households received timely responses to their grievances.

At the time of the site visit, BIWASE informed that they were working with LFDC and Tan Uyen Town PC for processing of the land use right certificate for the additional land acquisition.

4.3 ADB SPS INDIGENOUS PEOPLES SAFEGUARDS

Ref	ADB's Safeguard Principles/Requirements	Reference	Commentary/ Findings	Risk Ranking	Corrective action
	Indigenous Peoples Safeguard Requirement is not triggered for the Project development.	ADB SPS	<p>Based on IBIS' review of Project documents, information provided by BIWASE and findings during the site visit in May 2020, no IPs are located on-site or are known to be present in the surrounding area near the Project sites. The area surrounding the WTP and Intake Station is mainly occupied by the Kinh, who are the mainstream ethnic group. The area is not an original habitat of other ethnic groups.</p> <p>No IPs were known to have been affected by the WTP and the Intake Station. None was reported by BIWASE and DCARB.</p> <p>At this stage, no further action is considered to be warranted under this Safeguard.</p>	None Identified	No further action required.

4.4 PROJECT CATEGORISATION

Following the ADB's SPS Categorisation System and based on the gap analysis conducted above, the proposed categorisations of the Project are presented in the below table.

PROJECT	ENVIRONMENT ⁽¹⁾	INVOLUNTARY RESETTLEMENT ⁽²⁾	INDIGENOUS PEOPLES ⁽³⁾
Tan Hiep WTP Expansion	Category B	Category C	Category C

Note:

- (1) Category B. Based on the information provided (including from the locally completed EIA) the impact level is considered to be generally site-specific, few, if any of them are irreversible if properly managed. Thus, the proposed environmental categorisation of the Project is B.
- (2) Category C. The proposed project categorisation of the Project is C, as no land acquisition was directly required for the Project. All ADB-investment works are located within the existing footprint of Tan Hiep WTP and the Intake Station.
- (3) Category C. The proposed project categorisation of the Project is C, as there are no known Indigenous Peoples in the Project area and no known impacts on Indigenous Peoples from the Project.

5 CONCLUSION AND CORRECTIVE ACTION PLAN

This section summarises the proposed list of corrective actions that should be undertaken by BIWASE to address the gaps against the Applicable Standards identified in Section 3.2. The proposed CAP is provided in the table below, along with proposed timelines and specific action items.

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
1	Monitor water supply from the Dong Nai River in terms of its quality and quantity and conduct a review of its water supply periodically (i.e., every five years).	Water quality and quantity monitoring data Water supply review	BIWASE	Every five years	Administrative time.
2	<p>Develop and implement an O-ESMP for implementation during the operational phase of the WTP as a whole, which should include, at the minimum, the following directly relevant E&S elements:</p> <ul style="list-style-type: none"> • E&S policy • E&S roles and responsibility, and its organisation • Air emissions and ambient noise management • Solid waste management, particularly sludge management • Wastewater management • Hazardous material management, including chlorine management • E&S monitoring program, including monitoring of quantity and quality of raw water supply from the Dong Nai River • Emergency preparedness and response • Occupational H&S management • Community H&S management • Contractor and subcontractor management • Stakeholder Engagement Plan 	O-ESMP	BIWASE	Three months prior to commencement of operation of the Project	USD 20k to 30k if prepared by an external third party.

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
	(SEP) <ul style="list-style-type: none"> • Grievance Redress Mechanism (GRM) for both internal and external stakeholders • E&S capacity and training • Document control • Monitoring and review 				
3	Appoint a qualified and trained EHS or E&S officer as soon as practically possible to ensure that appropriate EHS or E&S measures are developed and implemented as soon as practically possible at the construction site of the WTP in line with the C-ESMP and WBG EHS Guidelines.	An official appointment of a qualified and trained EHS officer.	No. 5 Construction Joint Stock Company (a contractor of BIWASE) / BIWASE	As soon as possible, i.e., within one month	The cost is expected to vary depending on the qualification and experience of the candidate. However, it is anticipated to be up to USD1k per month. (This excludes any budget for equipment etc./safety upgrades on-site).
4	Develop and implement an external SEP and GRM for engagement with external stakeholders and management of any grievances from external stakeholders. The SEP and GRM can be considered as a part of the O-ESMP of the Project, instead of the C-ESMS so that grievance	SEP and GRM	BIWASE	Three months prior to commencement of operation of the Project	See Ref. 3 above.
5	Send officially the approved version of the EIA to Tan Hiep Ward and Uyen Hung Ward for public disclosure. The EIA should be posted on information boards of the wards and the disclosure of the EIA should be announced, i.e., through the wards'	Evidence demonstrating that the approved version of the EIA has been shared publicly and its disclosure is announced to the community.	BIWASE	Within one month.	Management time only.

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
	announcement systems to its community.				
6	Develop and implement an E&S monitoring program during the operational phase, taking into account commitments in the EMP and the approved version of the EIA. This can be considered as a part of the development and implementation of the O-ESMP.	An E&S monitoring program	BIWASE	Three months prior to commencement of operation of the Project	See Ref. 3 above.
7	Install temporary covering (e.g. vegetation or sediment traps in the Phase 2 expansion area where the land has been cleared and exposed.	Evidence demonstrating that temporary surface runoff drainage or sediment traps have been installed.	BIWASE	End of July 2020	<USD10k
8	Carry out periodic quality testing of the sludge to ensure that it meets QCVN 50:2013/BTNMT on National Technical Regulation on Hazardous Thresholds for Sludges from Water Treatment Process in line with the approved version of the EIA.	Sludge quality monitoring data	BIWASE	On-going	Minimal cost.
9	A solid waste management plan should also be developed, as part of the O-ESMP in line with the Applicable Standards. The waste management plan within the O-ESMP should be implemented to allow monitoring of solid waste generation on-site	A solid waste management plan	BIWASE	Three months prior to commencement of operation of the Project	See Ref. 3 above.

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
10	Registration with DoNRE as a hazardous waste generator.	Registration as a hazardous waste generator	BIWASE	Three months prior to commencement of operation of the Project	Minimal costs and management time.
11	A systematic review of the existing and future chlorine transport, storage, handling and use should be undertaken by a competent third party(ies) that considers the management and mitigation measures required to ensure the risk are as low as reasonably practicable (for on-site workers and off-site receptors). This should include a workshop, a design review and update, and/or conducting a hazard assessment, such as a HAZOP, to effectively assess potential hazards and necessary mitigation measures, modelling of chlorine gas release, mitigation measures (both preventive and responsive mitigation measures), preventative maintenance and inspection regimes and management plans (including emergency response). The mitigation hierarchy should be applied in the management and mitigation measures to be applied.	A systematic review of the existing and future chlorine management system, including transport, storage, handling and use.	BIWASE	As soon as possible but by end of December 2020	Estimated at US\$20,000 – 50,000 for the review itself, excluding costs associated with implementation of risk control measures or installation of control equipment.
12	Whilst the chlorine gas review process is being developed, at the minimum, the following mitigation measures should be considered and	a) Evidence demonstrating that the maximum chlorine gas storage limit is	BIWASE	As soon as possible by end of September 2020	a) Management time only. b) Costs not possible to estimate.

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
	<p>implemented as soon as possible:</p> <ul style="list-style-type: none"> a) Imposing a limit on the maximum quantity of chlorine gas that is stored both at the WTP and the Intake Station at all times; b) Inspection of the chlorine gas leak response system (including the chlorine gas detection system, the blower, and the neutralisation system) by a qualified, and preferably certified, independent third party; c) Provision of appropriate PPE for the handling and storage of chlorine gas cylinders and in the event of a chlorine gas related emergency scenario; and d) Development and implementation of an emergency preparedness and response plan for a chlorine gas leak scenario, including elements of community H&S, such as emergency drill involving surrounding community members. 	<p>implemented.</p> <ul style="list-style-type: none"> b) Evidence demonstrating that the chlorine gas leakage detection and response system has been inspected by a qualified third party and is in good working condition. c) Evidence of appropriate PPE for chlorine gas management. d) An ERP for chlorine gas related emergency scenarios. 			<ul style="list-style-type: none"> c) Management time and minimal costs. d) Management time and minimal costs.
13	Develop and implement a hazardous material management plan, as part of the O-ESMP for implementation at the WTP and the Intake Station.	A hazardous material management plan	BIWASE	Three months prior to commencement of operation of the Project	See Ref. 3 above.
14	Provide an appropriate area designated for chemical and hazardous material storage for use	Evidence demonstrating that an appropriate chemical and hazardous	BIWASE and its contractor(s)	By end of July 2020	Estimated at <USD5k

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
	during the construction phase. This area should be clearly marked, provided with appropriate warning signs, emergency preparedness and response measures, etc. and included as part of the C-ESMP and WBG General EHS Guidelines.	material storage area has been designated for use during the construction phase			
15	<p>Review and update the overall general and occupational H&S management at the WTP and the Intake Station. Some of the more immediate aspects to be reviewed and updated include:</p> <ul style="list-style-type: none"> • Emergency preparedness and response associated with chlorine gas leak, including the development and implementation of an ERP and other measures for chlorine gas leak scenarios etc., as noted above in Hazardous Materials Management (this should also include Community Health and Safety; please see further below); • Development and implementation of an ERP that covers other hazards and emergency scenarios and the operations of the WTP and the Intake Station; • Designation of appropriately qualified personnel to oversee workplace (construction) H&S; • Selection, use, training and maintenance of PPE, particularly for those required to be used 	<p>An ERP that covers all relevant hazards and emergency scenarios at the WTP and the Intake Station.</p> <p>An appropriately qualified personnel to oversee workplace H&S.</p> <p>Evidence demonstrating appropriate PPE provisions are selected and made available at the WTP and the Intake Station.</p> <p>An appropriately trained and qualified emergency response team, including certified first aiders.</p> <p>Evidence of an emergency response drill with surrounding communities</p>	BIWASE	<p>The ERP – September 2020</p> <p>The rest - One month prior to commencement of operation of the Project</p>	<p>ERP - See Ref. 3 above.</p> <p>The rest – management time and minimal cost</p>

REF	CORRECTIVE ACTION	DELIVERABLE	RESPONSIBILITY	TIMELINE	INDICATIVE BUDGET/ RESOURCES
	<p>during an emergency situation;</p> <ul style="list-style-type: none"> Establishment of a competent and appropriately trained emergency response team, including certified first aiders, at the WTP and the Intake Station, who can coordinate with the respective communities to disseminate appropriate emergency preparedness and response information and carry out a chlorine gas leak emergency drill with the communities as soon as practically possible and periodically thereafter. Where appropriate, these can be implemented in collaboration with the local fire department or local emergency response units. <p>Training covering the above areas should be provided to all staff members at the WTP and the Intake Station as soon as practically possible.</p>				
16	BIWASE should coordinate with the Uyen Hung ward to re-put the boundary landmark for Household Nguyen Thi Nguyet at the location of Water Intake Station in Uyen Hung ward.	Pictures and working minutes	BIWASE	It was agreed to have been completed by 31st May 2020	Minimal costs and management time.

ANNEX A: LIST OF KEY DOCUMENTS PROVIDED FOR REVIEW

NO.	NAME OF REVIEWED DOCUMENTS	DATE OF DOCUMENT
1	Tan Hiep WTP_FS report_VIE	2019
2	BIWASE decision to approve Tan Hiep project_VIE	29th March 2019
3	Appraisal of water intake work in pumping station by ATI (MOC)_VIE	2nd August 2019
4	Appraisal of water intake work in pumping station by ATI (MOC)_VIE	29th March 2019
5	LUCR for Raw water pump station of Tan Hiep WTP	28th July 2008
6	LUCR for Tan Hiep WTP_Area of 11.656 M2	2nd October 2017
7	LUCR for Tan Hiep WTP_Area of 64.203 M2	2nd October 2017
8	LURC for Tan Hiep WTP_Area of 300 M2	2nd October 2017
9	Layout of Water treatment plant	No date
10	Layout of raw water pumping station	No date
11	Layout of raw water pipeline	No date
12	Tan Uyen township PC's approval of compensation plan for Tan Hiep WTP extension project_VIE	25th July 2018
13	BD PPC's approval of reduced area of Tan Hiep WTP extension project_VIE	22nd August 2019
14	Permit of raw water pipe construction_VIE	21st November 2019
15	DOT permission for construction transmission pipeline	27th September 2019
16	Notice of Land acquisition for Tan Hiep WTP expansion phase 2	24th August 2017
17	List of AHs receiving compensation with signatures	11th November 2019
18	List of projects requiring land acquisition - Binh Duong PPC	16th December 2016
19	Minutes of agreement on supporting the construction of transmission pipeline	15th July 2019
20	Construction permit No. 5025/UBND-KTTH issued by Tan Uyen Town for installation of 940 m raw water pipeline	18th November 2019
21	Construction permit No. 3559/GPXD issued by Department of Construction for construction of the Intake Station	9th November 2019
22	E&S management report _ Tan Hiep WTP	April 2020
23	Decision 11/2006/QĐ-UBND promulgating the compensation price, supports for AHs by construction of Tan Hiep WTP (For existing land)	12th January 2006
24	Decision 84/2006/QĐ-UBND promulgating the compensation price, supports for AHs by construction of raw water intake pumping station (For existing land)	31st March 2006

NO.	NAME OF REVIEWED DOCUMENTS	DATE OF DOCUMENT
25	Decision 67/2007/QĐ-UBND adjusting for the Decision 84/2006/QĐ-UBND (For existing land)	9th July 2007
26	Minutes of the meeting of the people to notify the land acquisition policy and the detailed measurement survey (DMS) plans (For new land acquisition)	31st August 2017
27	Minutes of public posting for results of DMS and compensation plan (For new land acquisition)	9th April 2018
28	Approved compensation plans for 12 AHs by new land acquisition by LFDC (For new land acquisition)	2nd May 2018
29	LUCR for Tan Hiep WTP_Area of 64.203 M ²	4th June 2010
30	LUCR for Tan Hiep WTP_Area of 11.656 M ²	22nd October 2010
31	An application form for collective labor agreement of Binh Duong Water and Environment Joint Stock Company	22nd January 2018
32	LUCR for Tan Hiep WTP_Area of 64.203 M ³	5th June 2010
33	Draft Environmental Impact Assessment of the Project	3rd September 2019
34	Updated Environmental Impact Assessment of the Project	20th February 2020
35	Construction Environmental and Social Management Plan by contractor of the intake station	5th May 2019
36	Construction Environmental and Social Management Plan by contractor of the pipeline	13th November 2019
37	Construction Environmental and Social Management Plan by contractor of the additional WTP	15th February 2020
38	Contract No 1581-RCN/HD-KT/17 for sludge collection, transportation and disposal	2nd February 2017
39	Contract No 1713-RTT/HD-KT/19 for domestic waste collection, transportation and disposal	21st September 2019
40	Contract No 2238-RNH/HD-KT/19 for hazardous waste collection, transportation and disposal	25th September 2019
41	Water extraction permit (Dong Nai river) issued by MoNRE	29th August 2019
42	Quarterly environmental monitoring reports for the construction of the intake station	September and November 2019
43	Quarterly environmental monitoring reports for the construction of the additional WTP	April 2020
44	Construction progress reports of the additional WTP	February, March and April 2020
45	Decision No 432/QĐ-CPN.MT on forming management unit for the project	4th April 2019
46	Report on exploitation and using surface water of Tan Hiep WTP	August 2019

NO.	NAME OF REVIEWED DOCUMENTS	DATE OF DOCUMENT
47	Annual monitoring report (2019) on Occupational safety, Working sanitation and Fire prevention and firefighting	20th March 2020
48	Draft training plan in 2019	February 2019
49	the Thematic III – Evolution of Surface Water Quantity under the Report: Investigating, Surveying and Assessing the Present State of Surface Water Sources, Proposing Solutions to Surface Water Resource Management in Binh Duong Province	December 2014
50	Construction permit No. 2197/GPXD issued by Department of Construction for construction of the WTP	16 th June 2020
51	The Environmental Impact Assessment (EIA) of the Project prepared in June 2020	June 2020
52	Approval of the EIA of the Project prepared in June 2020	1 st July 2020

ANNEX B: LIST OF INTERVIEWEES

SITE REPRESENTATIVES

1. Trần Chiến Công: Tổng Giám đốc BIWASE
2. Bùi Trường Sơn: GD CN Tư Vấn BIWASE
3. Phạm Văn Chiến: GD CN Khu Liên Hợp (Tân Hiệp WTP)
4. Trương Văn Nghĩa: Trưởng phòng NS
5. Hồ Thị Thanh Thúy: Cán bộ chuyên trách An Toàn Lao Động – Trưởng phòng nhân sự chi nhánh xử lý chất thải
6. Nguyễn Văn Bình: Cán bộ phụ trách đất đai BIWASE
7. Mai Thị Đẹp: GD trung tâm quản lý chất lượng nước BIWASE
8. Dương Anh Thư: Trưởng Phòng KH ĐT BIWASE
9. Nguyễn Thị Ngọc Thanh: Phó Phòng KT ĐT BIWASE
10. Nguyễn Ngọc Tú: PGĐ CN KLH (Tan Hiệp WTP)
11. Bùi Minh Duy: Trưởng BQL – BIWASE
12. Nguyễn Ngọc Đoán: Kỹ sư WASE
13. Lê Văn Nam: Cán bộ phòng nhân sự quản trị CN Khu Liên Hợp (Tân Hiệp WTP)
14. Trần Ngọc Duy: PGĐ CN Khu Liên Hợp (Tân Hiệp WTP)
15. Lê Minh Bằng: Cán bộ phụ trách thu hồi đất của BIWASE (đã chuyển công tác)
16. Nguyễn Minh Quang: Quản lý trạm bơm của nhà máy nước Tân Hiệp
17. Nguyễn Trung Kiên: Nhân viên vận hành bơm

GOVERNMENT AUTHORITY REPRESENTATIVES

18. Tống Minh Phát: Trưởng phòng bồi thường trung tâm phát triển quỹ đất Tân Uyên (Tong Minh Phat: Head of compensation office of Tan Uyen land fund development center)
19. Phan Thành Được: Chuyên viên phòng KH ĐT (Phan Thanh Duoc: Expert in Planning and Investment Department)
20. Nguyễn Thanh Lâm: Chủ tịch phường Uyên Hưng
21. Nguyễn Văn Tấn: Cán bộ địa chính phường Uyên Hưng
22. Thượng Văn Bình: Chủ tịch phường Tân Hiệp
23. Lê Thị Kim Hồng: Chuyên viên phòng Quản lý Tài Nguyên Nước và Khoáng Sản – Sở Tài Nguyên và Môi Trường (Specialist of Department of Water and Mineral Resources Management - Department of Natural Resources and Environment)

INTERVIEWED AFFECTED HOUSEHOLDS

24. Phan Văn Miên, Tổ 1, khu phố 7, phường Uyên Hưng, TX Tân Uyên (Thu hồi đất năm 2006)
25. Nguyễn Thu Nguyệt, Tổ 1, khu phố 8, phường Uyên Hưng, TX Tân Uyên (Thu hồi đất năm 2006)

26. Trương Hữu Tâm: Khu phố Tân Phú, phường Tân Hiệp, TX Tân Uyên (Thu hồi đất năm 2018)
27. Trương Văn Út: Khu phố Tân Phú, phường Tân Hiệp, TX Tân Uyên (Thu hồi đất năm 2006)
28. Trương Văn Tư: Khu phố Tân Phú, phường Tân Hiệp, TX Tân Uyên (Thu hồi đất năm 2006)
29. Phạm Văn Huỳnh (Đỗ Thị Lợi): Khu phố Tân Phú, phường Tân Hiệp, TX Tân Uyên (Thu hồi đất năm 2018)
30. Lữ Cán Hùng: Số 88/3, Nguyễn Phạm Tuân, Phường 9, Quận 6, Thành phố HCM (có đất tại Tân Phú, Tân Hiệp bị thu hồi năm 2018).

ANNEX C: EXTERNAL FACTORS REVIEW

An External Factors Review (EFR) objective is to assess a company E&S Reputational Issues using free public sources of information (internet) in a methodological way. The methodology includes:

- Google search using key words (such as “company name” + land grabbing, “company name + pollution”, etc. – only the first 10 sites are reviewed, 5 to 10 key words combination to be done);
- The screening of a set of strategic web sites (Land Matrix, Environmental Justice Atlas, Global Forest Watch, WWF, Greenpeace & Human Rights Watch, Save the children)

The EFR can extend to a particular sector and geography that are relevant for the target company. It can also extend to other specific matters that are relevant for the assessment (Corruption Perception Index, Human Development Index, etc.). It generally requires two to four hours. The EFR results are presented in the below table.

WEB SITES	CONSULTED (Y/N)	FINDINGS
Result of Google search using the below key words (first 10 results):		
BIWASE + Viet Nam + Grievance BIWASE + Việt Nam + Khiếu nại	Y	None identified
Tan Hiep WTP + Viet Nam + Grievance Nhà máy nước Tân Hiệp + Việt Nam + Khiếu nại	Y	None identified
Tan Hiep WTP + Viet Nam + 12 households Nhà máy nước Tân Hiệp + Việt Nam + 12 hộ	Y	None identified
Tan Hiep WTP + Viet Nam + obstacles on land acquisition Nhà máy nước Tân Hiệp + Việt Nam + vướng mắc thu hồi đất	Y	None identified
Tan Hiep WTP + Viet Nam + compensation price Nhà máy nước Tân Hiệp + Việt Nam + giá bồi thường	Y	The Decisions 84/2006/QĐ-UBND; 11/2006/QĐ-UBND 67/2007/QĐ-UBND; These Decisions regulated on the compensation prices for affected land, affected trees and structures for land acquisition of Tan Hiep WTP in 2006 (First Phase of Tan Hiep WTP). https://coccoc.com/search?q=y=Nh%C3%A0+m%C3%A1y+n%C6%B0%E1%BB%9Bc+T%C3%A2n+Hi%E1%BB%87p+%2

WEB SITES	CONSULTED (Y/N)	FINDINGS
		B+Vi%E1%BB%87t+nam+%2B+gi%C3%A1+b%E1%BB%93i+th%C6%B0%E1%BB%9Dng
Tan Hiep WTP + Viet Nam + compensation payment Nhà máy nước Tân Hiệp + Việt Nam + chi trả bồi thường	Y	None identified
Tan Hiep WTP + Viet Nam + obstacles of compensation Nhà máy nước Tân Hiệp + Việt Nam + vướng mắc bồi thường	Y	None identified
Tan Hiep WTP + Viet Nam + Impacts on livelihood Nhà máy nước Tân Hiệp + Việt Nam + tác động sinh kế	Y	None identified
Tan Hiep WTP + Viet Nam + Social Impact Nhà máy nước Tân Hiệp + Việt Nam + tác động xã hội	Y	None identified
Tan Hiep WTP + Viet Nam + Labour & Working Conditions Nhà máy nước Tân Hiệp + Việt Nam + Điều kiện làm việc và lao động	Y	None identified
Tan Hiep WTP + Viet Nam + Retrenchment/Redundancy Nhà máy nước Tân Hiệp + Việt Nam + Cắt giảm nhân sự	Y	None identified
Tan Hiep WTP + Viet Nam + Sexual Harassment Nhà máy nước Tân Hiệp + Việt Nam + quấy rối tình dục	Y	None identified
Other sources of information identified during the above search:		
Screening of large organisation web sites:		
Environment Justice Atlas : The environmental justice atlas documents and catalogues social conflict around environmental issues. It allows to assess potential conflict with communities surrounding the project https://ejatlas.org	Y	None identified
Land Matrix : The Land Matrix is a global and independent land monitoring initiative that promotes transparency	Y	None identified

WEB SITES	CONSULTED (Y/N)	FINDINGS
and accountability in decisions over land and investment. http://www.landmatrix.org/		
GreenPeace is an independent campaigning organisation, which uses non-violent, creative confrontation to expose global environmental problems, and to force the solutions which are essential to a green and peaceful future. – www.greenpeace.org	Y	None identified
Human rights watch is a human rights non-governmental organisation headquartered in the USA – www.hrw.org	Y	None identified
Centre for Research on Multinationals (SOMO) is a critical, independent not-for-profit knowledge centre on multinationals www.somo.nl	Y	None identified
Business & human Rights Resource Center: The Resource Centre is an independent non-profit organisation. It tracks the human rights policy and performance of over 7500 companies in over 180 countries, making information publicly available. https://www.business-humanrights.org/en/find-companies?letter=o	Y	None identified
Wikileaks is an international non-profit organisation that publishes secret information, news leaks, and classified media provided by anonymous sources www.wikileaks.org	N	None identified

ANNXE D: PHOTOLOG

Below are five photographs of the Project provided by BIWASE on 14th April 2020.



Photo 1: The raw water intake station (photo taken in April 2020 by BIWASE)



Photo 2: The front view of the Intake Station (photo taken in April 2020 by BIWASE)



Photo 3: A view of the Intake Station at the time of the site visit in May 2020



Photo 4: A view of the clarification tank and filtration tank of the Phase 1 expansion

Project under construction (photo taken in April 2020 by BIWASE)



Photo 5: A view of the water tank and pump station of the Phase 1 expansion Project under construction



Photo 6: The existing water treatment facilities (left), the Project in the middle (in red oblong) and the Phase 2 expansion on the recently acquired land (right)

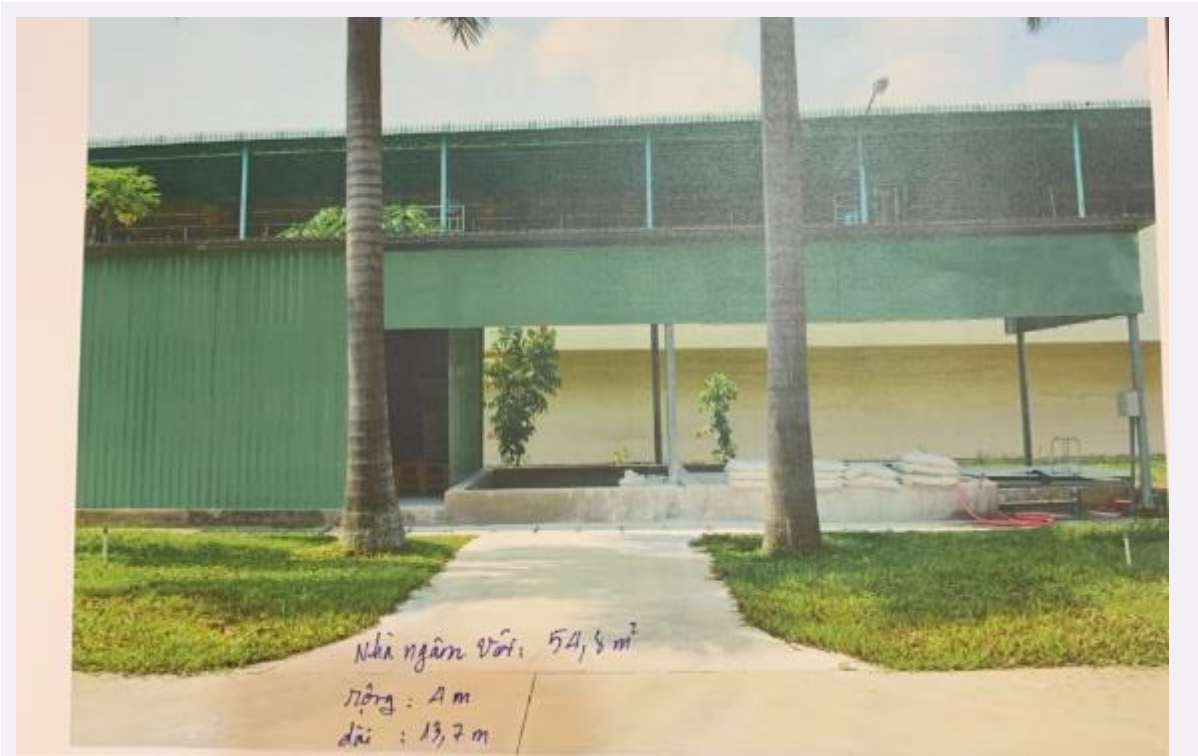


Photo 7: The existing lime storage at the WTP

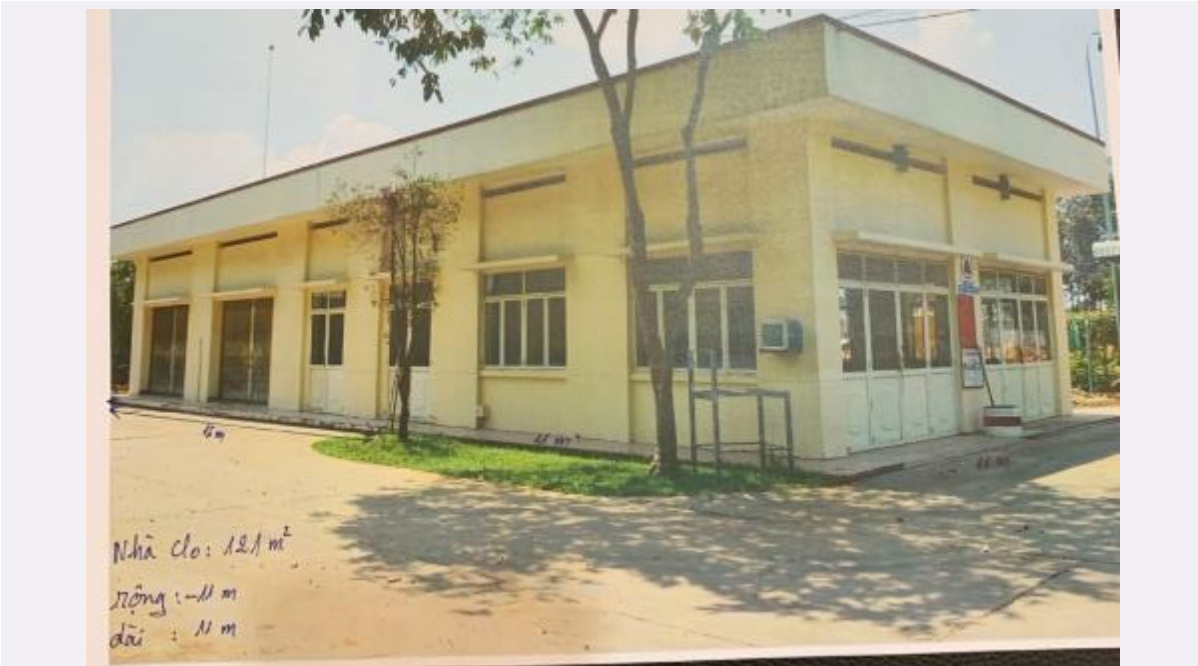


Photo 8: The existing chlorine gas storage house at the WTP



Photo 9: A diesel storage tank at the WTP



Photo 10: A section of the raw water transmission pipeline of Tan Hiep WTP



Photo 11: A neutralization tower for the new chlorine house at the Intake Station



Photo 12: The existing chlorine gas storage house at the Intake Station



Photo 13: Respirators provided inside the existing chlorine gas storage house at the Intake Station



Photo 14: The existing chlorine gas storage house at the WTP



Photo 15: Respirators stored in a box outside of the existing chlorine house at the WTP



Photo 16: A chlorine gas leak warning alarm and bell installed at the existing chlorine gas house of the WTP



Photo 17: A chlorine gas detector system in the existing chlorine house at the WTP



Photo 18: Chemicals used in the laboratory of the WTP



Photo 19: Oxygen cylinders on the ground at the construction site at the WTP



Photo 20: Workers working at high without harnesses at the construction site of the WTP.



Photo 21: Entrance to the construction site at the WTP with construction safety notes and banners for COVID 19 prevention



Photo 22: Construction site of the WTP without barricades and hazard warning signs



Photo 23: Accommodation of the security guard at the construction site of the WTP



Photo 24: Existing sludge drying yard in the WTP



Photo 25: Sludge storage yard in the Binh Duong Waste Treatment Complex



Photo 26: The brick making workshop at the Binh Duong Waste Treatment Complex



Photo 27: Meeting with BIWASE



Photo 28: Meeting with affected households

