Annexes

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ANNEX 1

Initial Environmental Examination

Initial Environmental Examination

April 2020

Philippines: Water District Development Sector Project

PLARIDEL WATER DISTRICT

Prepared by Plaridel Water District for the Local Water Utilities Administration and the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 20 March 2020)

Currency unit	–	peso (Php)
Php1.00	=	$0.01955
$1.00	=	Php 51.15

ABBREVIATIONS

ADB	–	Asian Development Bank
APs	–	Affected Persons
AWWA	–	American Water Works Association
BHS	–	Barangay Health Stations
CCC	–	Conditional Certificate of Conformance
CNC	–	Certificate of Non- Coverage
DAO	–	Department Administrative Order
DED	–	Detailed Engineering Design
DENR	–	Department of Environment and Natural Resources
DOH	–	Department of Health
DPWH	–	Department of Public Works and Highways
ECC	–	Environmental Compliance Certificate
EIA	–	Environmental Impact Assessment
EMB	–	Environmental Management Bureau
EMB-RO	–	Environmental Management Bureau–Regional Office
EMP	–	Environmental Management Plan
GRM	–	Grievance Redress Mechanism
IEE	–	Initial Environmental Examination
LGUs	–	Local Government Units
LWUA	–	Local Water Utilities Administration
MC	–	Memorandum Circular
MENRO	–	Municipal Environment and Natural Resources Office
MOA	–	Memorandum of Agreement
NAAQGV	–	National Ambient Air Quality Guideline Values
NRW	–	Non-Revenue Water
NSCP	–	National Structural Code of the Philippines
NWRB	–	National Water Resources
PAGASA	–	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PD	–	Presidential Decree
PEISS	–	Philippine Environmental Impact Statement System
PIU		Project Implementation Unit
PLAWD		Plaridel Water District
PMU	–	Project Management Unit
PNSDW	–	Philippine National Standards for Drinking Water
PPC		Price and Physical Contingency
PPE	–	Personal Protective Equipment
PSA	–	Philippine Statistics Authority
RA	–	Republic Act
REA	–	Rapid Environmental Assessment
SDGs	–	Sustainable Development Goals
SPS	–	Safeguard Policy Statement
TSP	–	Total Suspended Particulates

UNDP	–	United Nations Development Program
WD	–	Water District
WDDSP	–	Water District Development Sector Project
WDGRC	–	Water District Grievance Redress Committee

WEIGHTS AND MEASURES

	ha	–	Hectare
	Hp	–	Horsepower
	km	–	Kilometer
	km²	–	Square kilometer
	Lps		Liters per second
	lm	–	Meter
	m	–	Meter
	m²	–	Square meter
	m³	–	Cubic meter
	mamsl	–	Meters above mean sea level
	mm	–	Millimeter

NOTE

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

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EXECUTIVE SUMMARY

1. *Introduction.* Plaridel Water District (PLAWD) is an operational water supply utility located in Plaridel, Bulacan, Republic of the Philippines and one of the selected subprojects under the PHI: Water District Development Sector Project (WDDSP) funded by the Asian Development Bank (ADB). The project intends to improve the livability and competitiveness in urban areas outside Metro Manila through the provision of better water supply and sanitation infrastructure and services to a number of water districts (WDs). The Local Water Utilities Administration (LWUA) is the executing agency. The participating WDs, in this case PLAWD, are the implementing agencies for water supply and sanitation subprojects.

2. *Subproject Description*. The proposed subprojects aims to improve/upgrade the PLAWD water supply system to address the present demand for a potable water and alleviate the shortage of water. PLAWD Water Supply Improvement Project includes power generating set, storage facilities with booster, transmission/distribution pipelines, office building/motorpool/warehouse and service vehicle. Details of each component is discussed in **Section 3** Description of the Project.

3. *Legal Framework.* The policy, legal, and administrative frameworks relevant to the environmental assessment of water supply and sanitation projects in the Philippines have long been established by the following laws and regulations: (i) Presidential Decree (PD) 198- Provincial Water Utilities Act of 1973, (ii) PD 1586 – Establishing the Philippine Environmental Impact Statement System, (iii) DOH AO 2017-010 – Philippine National Standards for Drinking Water (PNSDW) of 2017, (iv) PD 1067 – Water Code of the Philippines, (v) PD 856 – Code on Sanitation of the Philippines, (vi) Republic Act (RA) No. 9275 - Philippine Clean Water Act of 2004, (vii) DENR AO 2016-08 – Water Quality Guidelines and General Effluent Standards of 2016, (viii) PD 705 – Forestry Reform Code of the Philippines; and (ix) RA 11058 – Occupational Safety and Health Standards.

4. *Environmental Safeguard.* All ADB funded project are required to strictly comply with Philippine government's environmental laws and requirements as well as ADB's Safeguard Policy Statement of 2009 (SPS). The PLAWD subproject was assessed to be environment Category B under the SPS and may have some adverse environmental impacts, but minor or temporary. Preparation of Initial Environmental Examination (IEE) report and securing ECC are required to monitor and mitigate the possible adverse environmental and public health impact. Acquisition of ECC for PLAWD Water Supply Improvement Project shall be carried out by the Contractor. Construction will not be started until the ECC has been obtained.

5. *Environmental and Socioeconomic Conditions*. Plaridel is a non-coastal area of Bulacan. It is surrounded with the rivers of Angat, Bulacan and Tabang River, both of which run through the town. The Angat River, otherwise known as Bulacan River, flows directly to Calumpit, Bulacan, meeting the Pampanga River. The Tabang River, a tributary with adjoining intersections dividing the middle of the present Poblacion of Plaridel, flows to the Manila Bay after passing through the towns of Guiguinto and Bulakan. The water of this river was called "tabáng" to refer to its fresh water. The geologic formation of Plaridel is Ancient Alluvium and Angat River is Recent Alluvium. Plaridel lies on the alluvial sediment plain of the Angat River which makes it particularly fertile and well suited for farming with soil textures of fine sandy loam, Prensa silty clay loam, Quingua silty loam, and Bigaa clay loam. There are no identified environmentally/ ecologically sensitive areas or receptors within/ near the subproject area that might be adversely affected by the subproject.

6. Based on the Philippine Statistics Authority (PSA), the estimated population of the project area in 2015 is about 107,805 spread across 19 barangays. The employment in Bulacan has been decreasing in the past years. This was due to rapid increase of the labor

force against a low rate in the jobs generated. Majority of the jobs generated were in the non-agricultural sector which are the service and industry sector. In 2015, all regions in the country showed an increase in the average annual family income. The annual average income for Region 3 was higher than the national average by as much as 12 percent. It is also the third among the regions with high average income per family. These estimates by the National Statistics in 2015 indicate that the province of Bulacan is above the average in terms of the levels of living condition in the country. The literacy rate exhibited a decreasing trend based on the past surveys. However, the latest survey at the rate of 95.87 for the province, it is ranked second in Central Luzon and higher than the national rate. In terms of security, the province's average monthly crime rate at 2.7 in 2008 was considered to be the lowest for the past thirteen years. The said rate is lower than the regional and national rate at 4.89 and 6.28, respectively.

7. *Impacts and EMP*. Anticipated impacts to be considered were assessed through the following activities: (i) gathering of inputs from interested and affected parties through consultation; (ii) desk research of information relevant to the proposed project; (iii) site visit and professional assessment; and (iv) evaluation of proposed design and potential impacts. Categorization of the project and formulation of mitigation measures have been guided by ADB's REA Checklist for Water Supply and SPS. Results of the environmental impacts screening shows that the impact types and magnitudes for both positive and negative impacts without the mitigating measures and the resulting situations when mitigating measures will be implemented.

8. Project implementation does not pose a significant environmental threat. The potential adverse impacts that are associated with construction, and O&M can be mitigated to acceptable levels with the recommended mitigation measures. Project implementation would generate temporary construction impacts that will be addressed in the EMP.

9. During pre-construction phase, potential nuisances and problems to the public during construction shall be addressed by inclusion in the tender documents of specific provisions addressing these issues. There are no known archaeological and cultural assets in these proposed sites. Nevertheless, precautions will be taken to avoid potential damage to any archaeological and cultural assets by inclusion of provisions in tender and construction documents requiring the contractors to immediately stop excavation activities and promptly inform the authorities if archaeological and cultural assets are discovered. During site preparation, when trees (timber or other forest products) are to be removed, a tree cutting permit shall be obtained as stipulated in PD 705 or the Forestry Reform Code of the Philippines. There are 18 trees affected.

10. The proposed project will not entail any involuntary resettlement and there are no adverse impacts on surrounding structures since the location of proposed project components is already owned by PLAWD.

11. Adverse environmental impacts during construction are temporary, minor and can easily be mitigated. There will be no massive construction activities that can damage the environment. Typical construction issues are manageable with the implementation of environmental management plan for (i) erosion and sediment runoff, (ii) noise and dust, (iii) vehicular traffic, (iv) construction wastes and spoils, (v) oil and fuel spillages, (vi) construction camps, and (vii) occupational and public health and safety.

12. Environmental problems due to operation of the proposed water supply can be avoided by incorporating the necessary measures in the design and use of appropriate operational procedures. PLAWD shall ensure that the potable water consistently passes the requirements of the Philippine National Standards for Drinking Water (PNSDW) of 2017. To achieve this,

implementation of the water safety plan with regular water quality monitoring shall be undertaken.

13. An Environmental Management Plan (EMP) is developed to effectively manage the environmental issues. This includes: (i) mitigating measures to be implemented, (ii) required monitoring associated with the mitigating measures, and (iii) implementation arrangement. Institutional set-up is presented in the implementation arrangement and discusses the roles during implementation and the required monitoring. It also outlines the requirements and responsibilities during pre-construction, construction, and operation phases. The EMP will be included in the bid documents.

14. *Public Consultation and Information Disclosure.* PLAWD has undertaken various activities concerning information disclosure, public consultation, and public participation for the proposed PLAWD subproject. These were done to achieve a meaningful stakeholders' consultation and ensure success. During the planning phase, information regarding the proposed sub-project was disclosed to the public. Key informant interviews and focus group discussions (FGDs) with Sangguniang Bayan of Plaridel and PLAWD officials and staff was held on October 2019 to request for cooperation and gather information and recommendations relative to the needs of the community particularly on water supply system. PLAWD conducted a public consultation/hearing on 29 November 2019 participated by a total of 105 participants/representatives from various institutions/organizations. Presentations on the proposed water supply improvement project and the proposed tariff adjustment/increase on water consumptions of the concessionaires were presented and discussed. Stakeholders/participants were encouraged and requested to raise their views on social and environmental issues to the topics presented. Stakeholders expressed their support for the PLAWD subprojects.

15. *Grievance Redress Mechanism.* Following discussions during the DDR mission, it was agreed to integrate the ADB required GRM into the current consumer feedback measures that are already implemented and are well established. This GRM provides a mechanism to cater both environmental and consumer related issues to record along with water supply, billing, and environmental complaints. The system however maybe adjusted or modified according to the need specific to the area of implementation considering its geographical and cultural setting as resolved by its Barangay Council. To protect also the indirect households, the project will integrate required GRM to include non-water district customer's feedback measures during Construction and Project Implementation affecting the environment. The established GRM at the PLAWD will receive, evaluate, and facilitate the resolution of affected persons (APs) concerns, complaints, and grievances about the social and environmental performance related to the various subprojects. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the subproject. This mechanism shall be disclosed in public consultations during detailed design and in meetings during the construction phase.

16. The PLAWD will maintain a full record of all complaints and grievances received, and the actions taken. PLAWD will also ensure grievances are recorded and reported in the Integrated Environmental and Social Safeguards reports that are submitted to ADB every six (6) months during project implementation. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by PLAWD. Complaints about environmental performance of projects issued an Environmental Certificate of Compliance (ECC) can also be brought to the attention of DENR-EMB. The process of handling such complaints is described in the Revised Procedural Manual (2007) for the IRR of PD 1586.

17. *Conclusion and Recommendations.* PLAWD's water supply subproject will benefit the general public by contributing to the long-term improvement in the water supply system of the project coverage area and providing safe drinking water to residents and commercial establishments in the municipality. The potential adverse environmental impacts are primarily associated with the construction period, which can be minimized through mitigating measures and environmentally sound engineering and construction practices.

18. With the implementation of the mitigation measures as proposed in the EMP, the subproject is not expected to cause irreversible adverse environment impacts. Also, the water supply subproject can be implemented in an environmentally acceptable manner without the need for further environmental assessment study, except for the conduct of a public consultations for compliance and further input. Should there be any significant change in the project scope, an updated or a new IEE will be prepared.

19. The proposed PLAWD subproject is hereby recommended for implementation with the following requirements to be strictly followed: (i) Tendering process shall ensure environmentally responsible procurement by requiring the inclusion of EMP provisions in the bidding and construction contract documents; (ii) Contractor's submittal of a CEMP which shall be included in the construction contract; (iii) Contract provisions on creation and operation of the WDGRC shall be included in construction contracts; (iv) LWUA, with its regulatory function, shall ensure that capability building for PLAWD shall be pursued; and (v) PLAWD shall continue the process of public consultation and information disclosure during detailed design and construction phases. The bidders should allocate budget and resources for EMP implementation in their bids.

1 INTRODUCTION

Plaridel Water District (PLAWD) is an operational water supply utility located in Plaridel, Bulacan, Republic of the Philippines and one of the selected subprojects under the PHI: Water District Development Sector Project (WDDSP) funded by the Asian Development Bank (ADB). The project intends to improve the livability and competitiveness in urban areas outside Metro Manila through the provision of better water supply and sanitation infrastructure and services to a number of water districts (WDs). The Local Water Utilities Administration (LWUA) is the executing agency. The participating WDs, in this case PLAWD, are the implementing agencies for water supply and sanitation subprojects.

The Plaridel Water District (PLAWD) was formed on March 2, 1987 through the issuance of Conditional Certificate of Conformance (CCC) No. 277, transitioning from waterworks under the local government into a public utility service.

Currently, PLAWD utilizes groundwater sources and has ten (10) pumping stations, two of which are non-operational due to water quality problem serving about 19 barangays.

The proposed project aims to expand PLAWD's water supply system coverage and meet the water supply demand until 2030 through the construction of storage facilities (reservoirs), and installation of transmission and distribution pipelines. Through this project, PLAWD will be able to develop and improve the water supply systems in all the 19 barangays of Plaridel especially those remote barangays that are not yet fully serviced. These barangays are Sipat, Lagundi, Bagong Silang, Bintog, Sto. Niño, Bulihan, Culianin, Parulan, and Agnaya.

The project can contribute to the Philippines' efforts in achieving the Sustainable Development Goals (SDGs) given by the United Nations Development Program (UNDP), specifically the SDG No. 6, which is the "Clean Water and Sanitation". The project shall address the increasing water demand of the municipality.

This is part of the Water District Development Sector Project (WDDSP) which is funded by the Asian Development Bank (ADB). All ADB-funded projects are required to comply with the Philippine government's environmental laws and requirements as well as ADB's Safeguard Policy Statement of 2009 (SPS). A preliminary environmental assessment using ADB's Rapid Environmental Assessment (REA) Checklist for Water Supply (**Annex 1**) was employedand this project is classified environment Category B and warrants the preparation of this Initial Environmental Examination (IEE) Report. Under the Philippine Environmental Impact Statement System (PEISS), an online Environmental Compliance Certificate (ECC) application is required for water supply projects with water source, treatment facilities, and Level III distribution system. Acquisition of ECC for PLAWD Water Supply Improvement Project shall be carried out by the Contractor. Construction will not be started until the ECC has been obtained.

The SPS of 2009 integrates the three operational safeguard policies of ADB on the environment, involuntary resettlement, and indigenous peoples, into a unified policy framework. ADB shall work with borrowers to implement the provisions of this policy framework in the form of project review and supervision, and capacity development support. The SPS also promotes participation of project-affected people and key stakeholders in project design and implementation.

The provisions of the ADB SPS of 2009 were carefully observed during the preparation of this report. This IEE Report is prepared to meet the following objectives:

(i) Provide a clear description of the proposed projects and all its components;

(ii) To present the national and local legal and institutional framework within which the environmental assessment has been carried out;

(iii) To provide information on the existing geographic, ecological, environmental, and social conditions, within the project's area of influence;

(iv) To assess the project's likely positive and negative direct and indirect impacts on physical, biological, socioeconomic, and physical cultural resources in the project's area of influence;

(v) To present the set of mitigation measures to be undertaken to avoid, reduce, mitigate, and manage adverse environmental impacts;

(vi) To describe the process undertaken during project design to engage stakeholders, the planned information disclosure measures, and the process for carrying out consultation with affected people and facilitating their participation during project implementation;

(vii) To describe the project's grievance redress mechanism for resolving project-related complaints;

(viii) To describe the monitoring measures and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures; and

(ix) To identify who is responsible for carrying out the mitigation and monitoring measures.

The development of this IEE is based on several field visits, review of secondary data, consultation with the Local Government Units (LGUs), officials of PLAWD, and the stakeholders from the community.

2 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

ADB Safeguard Policy Statement. The ADB, in its operations, requires the consideration of environmental issues in all aspects. The requirement of having an environmental assessment in all of ADB's project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans is stated in the SPS.

Screening and categorization. Categorization is to be undertaken using Rapid Environmental Assessment (REA). REA is sector-specific checklist that consist of questions relating to (i) the sensitivity and vulnerability of environmental resources in project area, and (ii) the potential for the project to cause significant adverse environmental impacts.

Projects are screened to identify their expected environmental impacts which are related to the type and location of the project; the sensitivity, scale, nature, and magnitude of its potential impacts; and the availability of cost-effective mitigation measures. This will determine the category of environmental assessment required for the project. Projects are categorized in the following four (4) categories:

(i) Category A. Projects could have significant adverse environmental impacts. An environmental impact assessment (EIA) is required to address significant impacts.

(ii) Category B. Projects could have some adverse environmental impacts, but of lesser degree or significance than those in Category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

(iii) Category C. Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

(iv) Category FI. Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

Environmental Management Plan (EMP). Identification of potential impacts and risks along with the mitigating measures through environmental assessment must be carried out. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the project's impact and risks.

Public disclosure. In order for the affected people, other stakeholders, and the general public to provide inputs to further improve the project's design and implementation, the ADB shall post in their website the following documents:

(i) for Environmental Category A projects, a draft EIA report at least 120 days before Board consideration;

(ii) final or updated EIA and/or IEE upon receipt; and (iii) environmental monitoring reports submitted by the project management unit (PMU) during project implementation upon receipt.

International Guidelines. The International Finance Corporation (IFC) established an Environmental, Health, and Safety (EHS) Guidelines with general and industry-specific examples of Good International Industry Practice (GIIP). In line with this, all ADB-funded projects must adopt the IFC-EHS Noise Guidelines.

Under the noise management section are noise prevention and mitigation measures, noise level guidelines, and noise monitoring. PLAWD must closely observe the IFC-EHS Noise Guidelines during the construction phase.

National Laws. The policy, legal, and administrative frameworks relevant to the environmental assessment of water supply and sanitation projects in the Philippines have long been established by the following laws and regulations:

(i) Presidential Decree (PD) 198 – Provincial Water Utilities Act of 1973;
(ii) PD 1586 – Philippine Environmental Impact Statement System;
(iii) Department of Health (DOH) Administrative Order 2017-010 – Philippine National Standards for Drinking Water (PNSDW) of 2017;
(iv) PD 1067 – Water Code of the Philippines;
(v) PD 856 - Code on Sanitation of the Philippines;
(vi) Republic Act (RA) 9275 – Philippine Clean Water Act of 2004;
(vii) Department of Environment and Natural Resources (DENR) Administrative Order 2016-08 – Water Quality Guidelines and General Effluent Standards of 2016;
(viii) PD 705 – Forestry Reform Code of the Philippines; and
(ix) RA 11058 – Occupational Safety and Health Standards

The overall institutional framework is found in PD 198 PD 198 (Provincial Water Utilities Act of 1973). PD 198 indicates that the LWUA and WD setup as defined by LWUA, is mandated to promote the development of WDs in the country as a government corporation. It is mandated to "primarily be a specialized lending institution for the promotion, development, and financing of local water utilities." In order to carry out the said mandate, the LWUA has major subsidiary roles such as:

(i) prescribing minimum standards and regulations in order to assure acceptable standards of construction materials and supplies, maintenance, operation, personnel training, accounting, and fiscal practices for local water utilities; and

(ii) providing technical assistance and personnel training programs.

The formation of local WDs is also mandated in the PD 198. These WDs were initially mandated to serve a single LGU or a cluster of LGUs by resolutions of the Local LGUs. These WDs, once formed becomes a legally autonomous body of the LGU. A board of directors, consisting of five (5) members representing different sectors that are appointed by either the mayor or the governor shall control the WD. The board of directors shall appoint the WD's general manager.

LWUA is the executing agency under the project, while WDs, like PLAWD, are the executing agencies for their respective subprojects. LWUA is responsible for the overall coordination, implementation and liaison of the project with ADB and other government offices.

PD 1586 (Philippine Environmental Impact Statement System (PEISS)) and its implementing rules and regulation under the DENR Administrative Order No. 30 of 2003 (DAO 2003-30) cover the environmental assessment provision. The PEISS allows the project manager to receive an Environmental Compliance Certificate (ECC) from the Environmental Management Bureau (EMB) prior to the introduction of an infrastructure or development project. Under ADB's Special Assessment Report on Environmental Safeguards (2006), the Philippine environmental assessment program complies with the environmental assessment criteria of ADB.

To ensure that the quality of the water supplies are kept on a level that is suitable for human consumption, DOH Administrative Order 2017-010 (DAO 2017-010) or the Philippine National Standards for Drinking Water (PNSDW) of 2017 which prescribes the standard quality for drinking waters was issued as guide for government and private developers and operators, bulk water suppliers, water refilling station operators and other drinking-water providers. The established threshold of each water quality parameter in the PNSDW of 2017 will ensure the safety of drinking water and protect the public health.

Appropriation and utilization of waters for various purposes shall be governed by PD 1067 or the Water Code of the Philippines and its amended Implementing Rules and Regulations (IRR). The National Water Resources Board (NWRB) shall administer and enforce the provisions thereof.

Pursuant to RA 9275 or the Philippine Clean Water Act of 2004, DENR Administrative Order No. 08 series of 2016 or the Water Quality Guidelines and General Effluent Standards of 2016, defines the standards for the discharge of all industrial and municipal wastewater while PD 856 (Philippine Sewage Code) also includes sewage and septic tanks. To ensure the compliance of the facility with the specified effluent requirements, the project applicant must obtain a discharge permit from the EMB-RO.

During site preparation, when trees (timber or other forest products) are to be removed, a tree cutting permit shall be obtained as stipulated in PD 705 or the Forestry Reform Code of the Philippines.

To ensure a safe and healthful workplace for all the workforce and protection against all hazards in their work environment, adherence to Department of Labor and Employment (DOLE) Occupational Safety and Health Hazard Standards must be followed, with emphasis on the following:

(i) Personal Protective Equipment (PPE-Rule 1040) which specify the use and types of eye and face protection, respiratory protection, hand and arm protection, safety belt life lines and safety nets and safety shoes;
(ii) Personal Protective Equipment, and minimum space requirement for gas, electric welding and cutting operations (Rule1100);
(iii) Fire protection and control rule (Rule 1940);
(iv) Notification and record keeping requirements (Rule 1050);
(v) Mandatory provisions of a safety program for local Contactors in line with overall safety program of the Proponent; and
(vi) Effective preparedness program against accidents and untoward incidents through ready medical assistance as well as early detection, warning and response measures.

Table 2-1 presents the summary of environmental regulations and mandatory requirements for the proposed subproject.

Table 2-1: Summary of Environmental Regulations and Mandatory Requirements for the Proposed Subproject

Laws, Rules and Regulations	Description/Salient Features	Permit/Clearance	Required for the Project
PD 1586 and its implementing rules and regulations	Requires project proponents to secure ECC from the DENR before an infrastructure project is constructed. DAO 03-30 provides the implementing rules and regulations for PD 1586 and the Revised Procedural Manual of DAO 03-30 integrates DENR policies to promote EIA as a planning and decision-making tool. DENR MC No. 2011-005 further streamlined the PEISS.	ECC for proposed projects under the EIS system or Certificate of Non- Coverage (CNC) for proposed projects not covered by the system.	An online ECC application is required for water supply projects with water source, treatment facilities, and Level III distribution system in order to secure an ECC.
Permit to Cut Trees	Required by the DENR before cutting any tree in both public and private properties.	Permit to Cut is secured from the EMB-RO where the tree/s to be cut are located	To be secured before cutting of trees during site preparation
IFC-EHS Noise Guidelines	Provides measures on noise prevention and mitigation measures, noise level guidelines, and noise monitoring.	None	To be implemented during construction period.
(DOLE Occupational Safety and Health Hazard Standards	Ensures a safe and healthful workplace for all the workforce and protection against all hazards in their work environment	None	To be implemented during construction and operation period.

Laws, Rules and Regulations	Description/Salient Features	Permit/Clearance	Required for the Project
DAO 2017-010 or the PNSDW of 2017	Prescribes the standard quality for drinking waters as guide for government and private developers and operators, bulk water suppliers, water refilling station operators and other drinking-water providers. The established threshold of each water quality parameter in the PNSDW of 2017 will ensure the safety of drinking water and protect the public health.	None	Periodic reports shall be submitted to DOH during the operation period.
Water Code of the Philippines (PD 1067) and its amended implementing rules and regulations	Establishes the principles for appropriation, control and conservation of water resources in the country and defines the rights and obligations of water users.	Water Permit and Permit to Drill from NWRB	Water Permits for the existing pumping station already secured
DOH Administrative Order No. 2014-0027	Mandates all drinking-water service providers to develop and implement their Water Safety Plan.	None.	PLAWD to update their water safety plan upon completion of the Water Supply Improvement Project

Local Laws. The legal administrative framework relevant to creating the PLAWD is the Conditional Certificate of Conformance (CCC) No. 277 dated March 2, 1987.

3 DESCRIPTION OF THE PROJECT

A. Existing Situation of Plaridel Water District's Water Supply and Resources

The present source of water supply for domestic, commercial and institutional demands in the Municipality of Plaridel is groundwater through wells and infusion of 2 Million Liters per Day (MLD) from Bulacan Bulk Water of Luzon Clean Water Development Corporation.

PLAWD has ten (10) pumping stations, two of which are non-operational due to issues on water quality. The eight (8) operational pumping stations have a total combined discharge of around 293 liters per second (Lps). The wells have diameter ranging from 100 to 150 millimeters (mm), depths ranging from 52 to 185 meters (m) and discharge capacities ranging from 24 to 67 Lps.

Table 3-1: Pumping Stations of PLAWD

Pump Station	Location (Brgy.)	Depth (m)	Discharge (Lps)	Pump Rating (Hp)	Genset (kVA)
PS 02	Tabang	185	67.00	50	166
PS 03	Bintog	52	32.60	30	75
PS 04	Sipat	101	48.12	50	75
PS 06	Culianin	65	24.45	15	36
PS 07	Parulan	78	28.60	30	-
PS 08	Bulihan	78	28.60	30	-
PS 09	Lalangan	141	34.18	30	-
PS 10	Tabang (Sitio Santiago)	140	30.17	30	-

PLAWD utilizes gas chlorinating facility in each pumping station to treat the water prior to distribution. PLAWD has a 330 m³ elevated steel tank located in Brgy. Lalangan at elevation of around 30 m above ground level.

PLAWD is currently servicing 19 barangays with four (4) barangays (i.e. Sto. Niño, Lagundi, Lalangan and Bagong Silang) affected by low water pressure ranging from 2 to 3 psi especially during peak hours. There are also residents in some remote barangays who still do not have water service connections. These barangays are Sipat, Lagundi, Bagong Silang, Bintog, Sto. Niño, Bulihan, Culianin, Parulan, and Agnaya which are targeted to provide with service connections in the near future.

Figure 3-1 shows the service coverage area of PLAWD

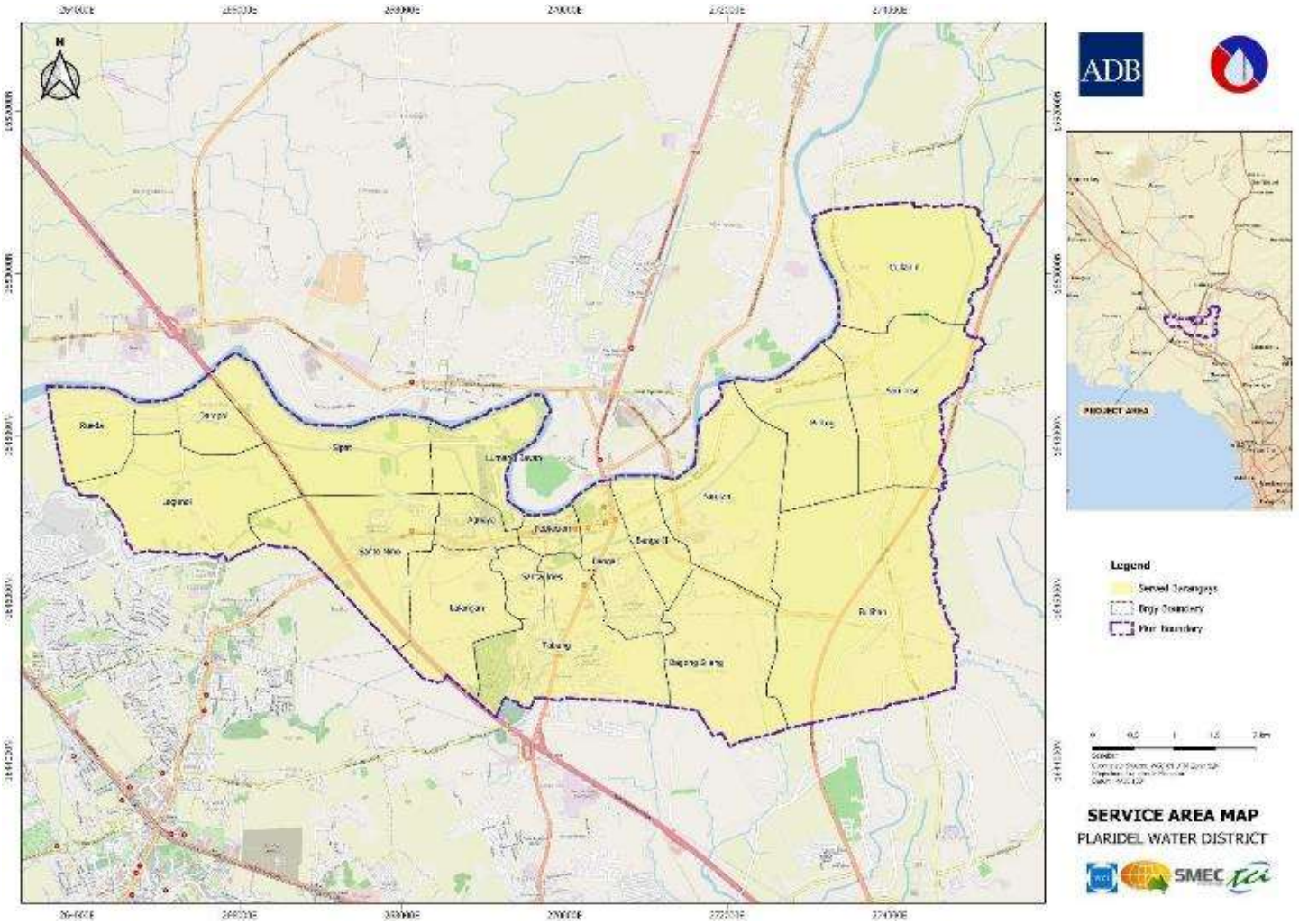


Figure 3-1: Service Coverage Area of PLAWD

The existing transmission and distribution pipelines of PLAWD consist of both uPVC and steel pipes with sizes ranging from 50 to 300 mm. Other water system appurtenances include gate valves and fire hydrants.

Table 3-2: Existing Transmission and Distribution Lines of PLAWD

Pipe Diameter (mm)	Length (lm)	Material
300	1,835	Steel Pipe
250	531	Steel Pipe
200	14,330	uPVC Pipe
150	14,437	uPVC Pipe
100	25,103	uPVC Pipe
75	649,427	uPVC Pipe
50	39,658	uPVC Pipe

Figure 3-2 and **Figure 3-3** show the water supply layout map and network schematic map of PLAWD.

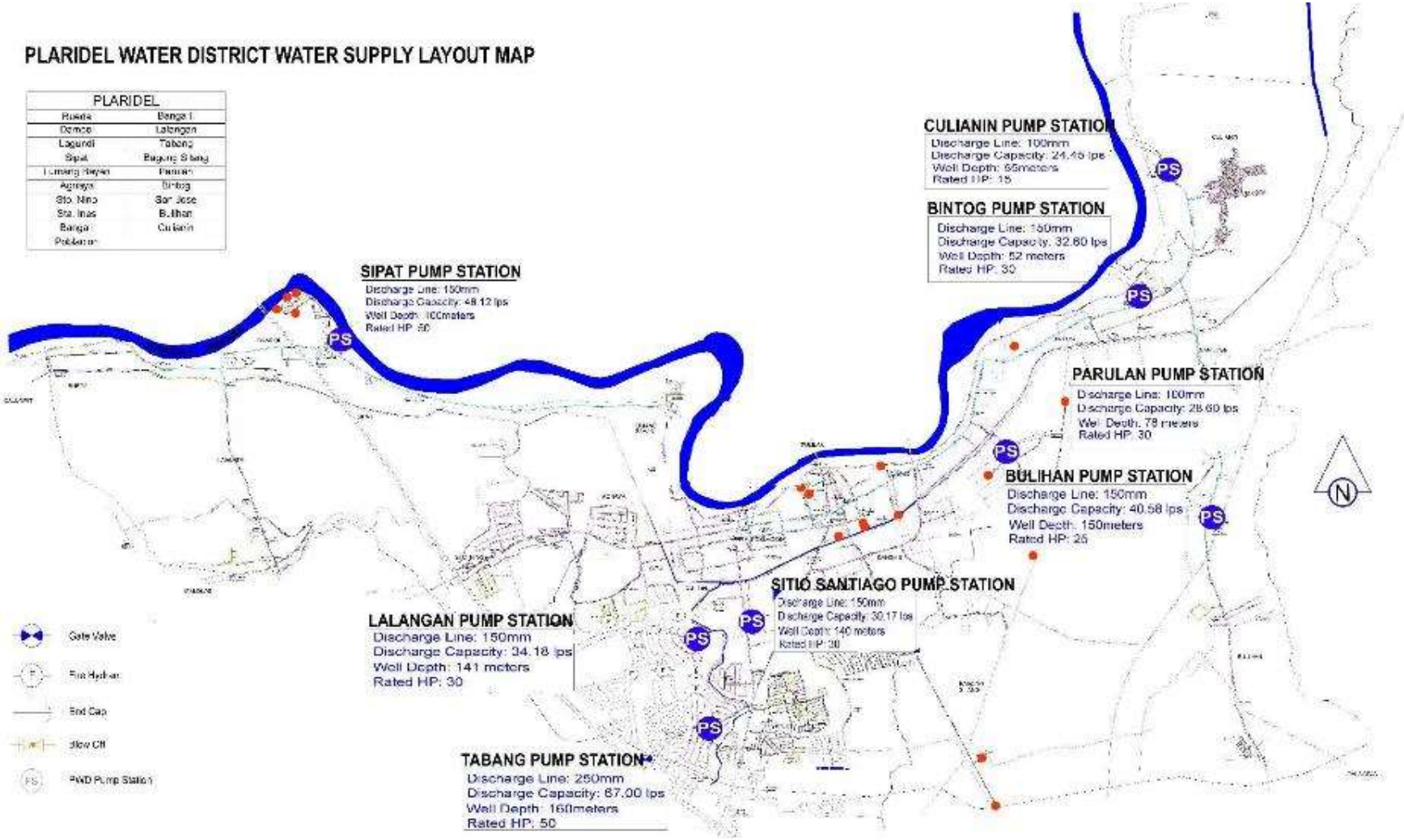


Figure 3-2: PLAWD Water Supply Layout Map

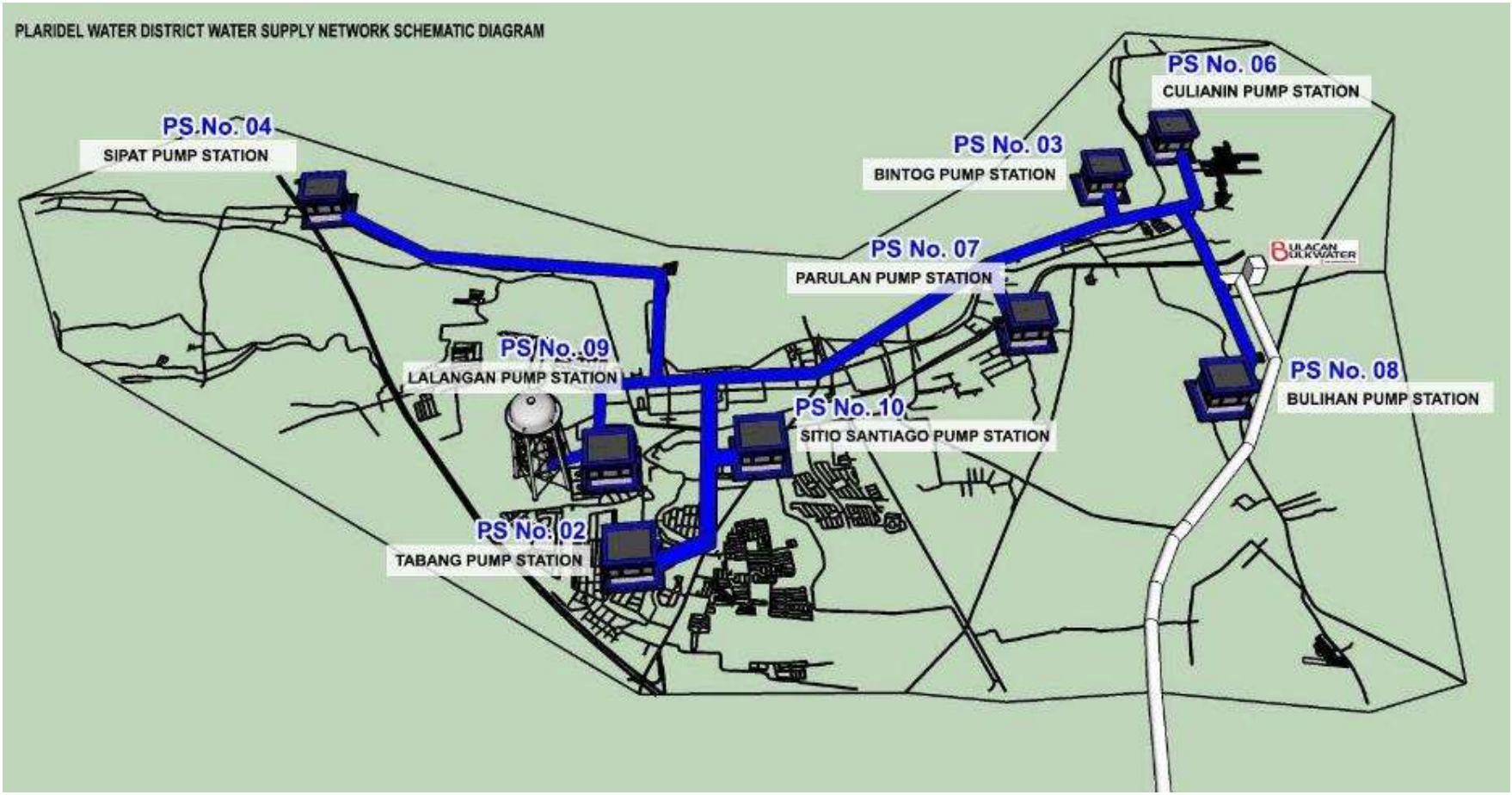


Figure 3-3: PLAWD Water Supply Network Schematic Map

B. Operation and Maintenance

The operation and maintenance of the existing water supply system is handled by the PLAWD's Engineering and Operations Department. The operation and maintenance expenses is comprised of pumping expenses, water treatment, annual dues to be paid to other agencies (e.g., National Water Regulatory Board), customers' account, and administration and general expenses.

C. Water Use

PLAWDPLAWDPLAWDThe water usage is classified as domestic/residential, commercial, government/institutional and industrial/bulk. The residential consumers are persons and establishments whose connections are intended for their own personal use and other related activities while government establishments' water uses are for their operation in performing public service. Meanwhile, commercial usage of water is intended for business, trade activities, occupation, or to produce a commercial or saleable product. This is further classified into Commercial A, B, or C. Finally, bulk/wholesale are connections that are intended and connected to the system for the purpose of reselling the same without transforming into a new product.

As of December 2018, PLAWD has 18,329 service connection, of which 16,614 are domestic/residential, 1,632 commercial, 81 government/institutional and 2 bulk/industrial.

D. Water Consumption and Total Water Production

PLAWDThe total production of PLAWD was recorded at 513,839.97 m^3/month while total billed volume is 448,611.25 m^3/month. The average water consumption per connection is computed to be about 24.48 m^3/month.

E. Service Connection

The projections for the number of service connections for each category were based on the potential for growth of the service area and discussion with PLAWD officials.

> The total number of service connections is projected to reach 31,722 by year 2030 broken down as 29,318 domestic/residential, 2,288 commercial, 113 institutional/government and three (3) industrial/bulk. A ratio of 4.5 persons per connection was used throughout the projection period to estimate the number of the population served.

Table *3-3* to

Table 3-5 shows the projected number of service connections and corresponding number of served population by years 2018, 2021, and 2030.

Table 3-3: 2018 Existing Served Population and Water Demand

Barangay	Pop'n	Service Area Pop'n	Domestic			Commercial			Institutional		Industrial/Bulk		Total			Non-Revenue Water (m^3/day)	Average Day Demand (m^3/day)
			No. of Conn	Served Pop'n	Water Demand	No. of Conn	Served Pop'n	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Served Pop'n	Water Demand		
1. Agnaya	2,632	2,579	500	2,250	362.6	68	306	102.0	3	10.5	-	-	571	2,556	475.1	71.0	546.1
2. Bagong Silang	3,573	3,502	407	1,832	295.3	10	45	15.0	2	7.0	-	-	419	1,877	317.3	47.4	364.7
3. Banga I	7,473	7,324	1,192	5,364	864.5	431	1,940	646.5	3	10.5	1	53	1,627	7,304	1,574.0	235.2	1,809.2
4. Banga II	9,683	9,489	1,381	6,215	1,001.7	169	761	253.5	8	28.0	-	-	1,558	6,976	1,283.2	191.7	1,474.9
5. Bintog	4,434	4,345	709	3,191	514.3	47	212	70.5	4	14.0	-	-	760	3,403	598.8	89.5	688.3
6. Bulihan	6,111	5,989	683	3,074	495.4	44	198	66.0	4	14.0	-	-	731	3,272	575.4	86.0	661.4
7. Culianin	4,240	4,155	349	1,571	253.2	4	18	6.0	-	-	-	-	353	1,589	259.2	38.7	297.9
8. Dampol	3,323	3,257	561	2,525	407.0	28	126	42.0	5	17.5	-	-	594	2,651	466.5	69.7	536.2
9. Lagundi	4,564	4,473	718	3,231	520.7	42	189	63.0	3	10.5	-	-	763	3,420	594.2	88.8	683.0
10. Lalangan	2,220	2,176	243	1,094	176.3	10	45	15.0	3	10.5	-	-	256	1,139	201.8	30.2	232.0
11. Lumang Bayan	5,969	5,850	1,109	4,991	804.4	61	275	91.5	5	17.5	-	-	1,175	5,266	913.4	136.5	1,049.9
12. Parulan	8,164	8,001	1,410	6,345	1,022.6	88	396	132.0	3	10.5	-	-	1,501	6,741	1,165.1	174.1	1,339.2
13. Poblacion	4,025	3,945	743	3,344	539.0	117	527	175.5	16	56.0	-	-	876	3,871	770.5	115.1	885.6
14. Rueda	1,855	1,818	292	1,314	211.8	12	54	18.0	2	7.0	-	-	306	1,368	236.8	35.4	272.2
15. San Jose	4,755	4,660	679	3,056	492.5	42	189	63.0	4	14.0	-	-	725	3,245	569.5	85.1	654.6
16. Santa Ines	3,176	3,113	470	2,115	340.9	24	108	36.0	3	10.5	-	-	497	2,223	387.4	57.9	445.3
17. Santo Niño	11,793	11,557	1,170	5,265	848.6	82	369	123.0	3	10.5	-	-	1,255	5,634	982.1	146.8	1,128.9
18. Sipat	6,299	6,173	936	4,212	678.8	49	221	73.5	3	10.5	-	-	988	4,433	762.8	114.0	876.8
19. Tabang	21,668	21,235	3,062	13,779	2,220.8	304	1,368	456.0	7	24.5	1	53	3,374	15,147	2,753.8	411.5	3,165.3
Total	**115,959**	**113,641**	**16,614**	**74,768**	**12,050.4**	**1,632**	**7,347**	**2,448.0**	**81**	**283.5**	**2**	**105**	**18,329**	**82,115**	**14,886.9**	**2,224.6**	**17,111.5**

Table 3-22: 2021 Served Population and Water Demand

Barangay	Pop'n	Service Area Pop'n	Domestic			Commercial			Institutional		Industrial/Bulk		Total			Non-Revenue Water (m³/day)	Average Day Demand (m³/day)
			No. of Conn	Served Pop'n	Water Demand	No. of Conn	Served Pop'n	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Served Pop.	Water Demand		
1. Agnaya	2,695	2,641	512	2,303	380.0	73	329	109.5	3	10.5	-	-	588	2,632	500.0	74.7	574.7
2. Bagong Silang	3,844	3,767	670	3,017	497.8	12	54	18.0	2	7.0	-	-	684	3,071	522.8	78.1	600.9
3. Banga I	7,952	7,793	1,251	5,629	928.8	477	2,147	715.5	3	10.5	1	52.5	1,732	7,776	1,707.3	255.1	1,962.4
4. Banga II	10,378	10,170	1,730	7,787	1,284.9	192	864	288.0	9	31.5	-	-	1,931	8,651	1,604.4	239.7	1,844.1
5. Bintog	4,769	4,674	885	3,983	657.2	52	234	78.0	5	17.5	-	-	942	4,217	752.7	112.5	865.2
6. Bulihan	6,530	6,399	852	3,835	632.8	49	221	73.5	5	17.5	-	-	906	4,056	723.8	108.2	832.0
7. Culianin	4,375	4,287	434	1,951	321.9	4	18	6.0	-	-	-	-	438	1,969	327.9	49.0	376.9
8. Dampol	3,479	3,409	700	3,152	520.1	31	140	46.5	5	17.5	-	-	736	3,292	584.1	87.3	671.4
9. Lagundi	4,909	4,811	896	4,031	665.1	47	212	70.5	3	10.5	-	-	946	4,243	746.1	111.5	857.6
10. Lalangan	2,371	2,324	422	1,901	313.7	12	54	18.0	3	10.5	-	-	437	1,955	342.2	51.1	393.3
11. Lumang Bayan	6,615	6,483	1,328	5,974	985.7	73	329	109.5	6	21.0	-	-	1,407	6,303	1,116.2	166.8	1,283.0
12. Parulan	8,782	8,606	1,756	7,901	1,303.7	101	455	151.5	4	14.0	-	-	1,861	8,356	1,469.2	219.5	1,688.7
13. Poblacion	4,171	4,088	775	3,487	575.4	129	581	193.5	17	59.5	-	-	921	4,068	828.4	123.8	952.2
14. Rueda	1,915	1,877	364	1,640	270.6	13	59	19.5	2	7.0	-	-	379	1,699	297.1	44.4	341.5
15. San Jose	5,083	4,981	847	3,810	628.7	48	216	72.0	4	14.0	-	-	899	4,026	714.7	106.8	821.5
16. Santa Ines	3,417	3,349	586	2,638	435.3	27	122	40.5	3	10.5	-	-	616	2,760	486.3	72.7	559.0
17. Santo Niño	12,890	12,632	1,455	6,547	1,080.3	97	437	145.5	4	14.0	-	-	1,556	6,984	1,239.8	185.3	1,425.1
18. Sipat	6,775	6,639	1,214	5,462	901.2	58	261	87.0	3	10.5	-	-	1,275	5,723	998.7	149.2	1,147.9
19. Tabang	23,780	23,304	4,102	18,457	3,045.4	357	1,607	535.5	8	28.0	1	52.5	4,468	20,064	3,661.4	547.1	4,208.5
Total	**124,729**	**122,234**	**20,779**	**93,505**	**15,428.6**	**1,852**	**8,340**	**2,778.0**	**89**	**311.5**	**2**	**105.0**	**22,722**	**101,845**	**18,623.1**	**2,782.8**	**21,405.9**

Table 3-23: 2030 Served Population and Water Demand

Barangay	Population	Service Area Pop'n	Domestic			Commercial			Institutional		Industrial/Bulk		Total			Non-Revenue Water (m³/day)	Average Day Demand (m³/day)
			No. of Conn	Served Pop'n	Water Demand	No. of Conn	Served Pop'n	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Served Pop'n	Water Demand		
1. Agnaya	3,008	2,948	573	2,580	425.7	81	365	121.5	4	14.0	-	-	658	2,945	561.2	83.9	645.1
2. Bagong Silang	4,777	4,682	1,008	4,537	748.6	14	63	21.0	3	10.5	-	-	1,025	4,600	780.1	116.6	896.7
3. Banga I	9,664	9,471	1,521	6,844	1,129.3	580	2,610	870.0	4	14.0	1	52.5	2,106	9,454	2,065.8	308.7	2,374.5
4. Banga II	12,806	12,550	2,548	11,468	1,892.2	237	1,067	355.5	11	38.5	-	-	2,796	12,535	2,286.2	341.6	2,672.8
5. Bintog	5,926	5,811	1,224	5,509	909.0	65	293	97.5	6	21.0	-	-	1,295	5,802	1,027.5	153.5	1,181.0
6. Bulihan	8,003	7,843	1,318	5,932	978.8	60	270	90.0	6	21.0	1	52.5	1,385	6,202	1,142.3	170.7	1,313.0
7. Culianin	4,974	4,875	724	3,258	537.6	5	23	7.5	2	7.0	-	-	731	3,281	552.1	82.5	634.6
8. Dampol	4,077	3,996	850	3,825	631.1	37	167	55.5	6	21.0	-	-	893	3,992	707.6	105.7	813.3
9. Lagundi	6,103	5,981	1,259	5,663	934.4	58	261	87.0	4	14.0	-	-	1,321	5,924	1,035.4	154.7	1,190.1
10. Lalangan	2,895	2,837	610	2,745	452.9	14	63	21.0	4	14.0	-	-	628	2,808	487.9	72.9	560.8
11. Lumang Bayan	8,755	8,580	1,805	8,121	1,340.0	96	432	144.0	8	28.0	-	-	1,909	8,553	1,512.0	225.9	1,737.9
12. Parulan	10,922	10,704	2,248	10,115	1,669.0	126	567	189.0	4	14.0	-	-	2,378	10,682	1,872.0	279.7	2,151.7
13. Poblacion	4,785	4,690	893	4,019	663.1	148	666	222.0	20	70.0	-	-	1,061	4,685	955.1	142.7	1,097.8
14. Rueda	2,170	2,127	453	2,037	336.1	15	68	22.5	2	7.0	-	-	470	2,105	365.6	54.6	420.2
15. San Jose	6,233	6,109	1,191	5,358	884.1	59	266	88.5	5	17.5	-	-	1,255	5,624	990.1	147.9	1,138.0
16. Santa Ines	4,246	4,161	822	3,700	610.5	34	153	51.0	4	14.0	-	-	860	3,853	675.5	100.9	776.4
17. Santo Niño	16,583	16,252	2,438	10,971	1,810.2	124	558	186.0	5	17.5	-	-	2,567	11,529	2,013.7	300.9	2,314.6
18. Sipat	8,426	8,258	1,759	7,915	1,306.0	72	324	108.0	4	14.0	-	-	1,835	8,239	1,428.0	213.4	1,641.4
19. Tabang	30,859	30,242	6,074	27,335	4,510.3	463	2,084	694.5	11	38.5	1	52.5	6,549	29,419	5,295.8	791.3	6,087.1
Total	**155,212**	**152,117**	**29,318**	**131,932**	**21,768.9**	**2,288**	**10,300**	**3,432.0**	**113**	**395.5**	**3**	**157.5**	**31,722**	**142,232**	**25,753.9**	**3,848.1**	**29,602.0**

F. Non-revenue Water

Non-revenue water is water that has been produced and is “lost” before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies). High levels of NRW are detrimental to the financial viability of water utilities, as well to the quality of water itself. NRW is typically measured as the volume of water "lost" as a share of net water produced. However, it is sometimes also expressed as the volume of water “lost” per km of water distribution network per day.

The current and projected volume of NRW are presented in **Table 3-3** to **Table 3-5**.

G. Water Demand Projection

The total water demand is estimated to be the sum of all domestic, commercial/industrial and institutional consumptions and allowance for non-revenue water due losses in the system. In order to estimate the total water requirement of the system, the following unit consumption for each category are used: 165 liters per capita per day (Lpcd) for domestic connection, 1.5 m³/day for commercial connection, 3.5 m³/day for institutional connection and 52.50 m³/day for industrial/bulk connection. Non-revenue water is estimated at 13% of the total water demand.

Based on the foregoing, the projected average water demand of the system for the years 2021 and 2030 are estimated at 21,405.9 m³/day (247.8 Lps) and 29,602.0 m³/day (342.6 Lps), respectively.

Table 3-6 shows the year by year served population, water demand and service connections projections.

Table 3-6: Served Population, Water Demand, and Number of Connections

Period	Service Area Pop'n	Served Pop'n	Domestic		Commercial		Institutional		Industrial/Bulk		Total		Non-Revenue Water (m³/day)	Average Day Demand (m³/day)
			No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand	No. of Conn	Water Demand		
June 2018	112,275	79,078	16,021	11,619.0	1,551	2,326.5	81	281.8	2	105.0	17,655	14,332.3	2,141.80	16,474.0
December 2018	113,641	82,115	16,614	12,050.4	1,632	2,448.0	81	283.5	2	105.0	18,329	14,886.9	2,224.60	17,111.5
June 2019	115,039	85,397	17,308	12,553.0	1,669	2,503.5	82	287.0	2	105.0	19,061	15,448.5	2,308.40	17,756.9
December 2019	116,436	88,684	18,002	13,056.0	1,705	2,558.0	84	292.8	2	105.0	19,793	16,011.8	2,392.60	18,404.4
June 2020	117,868	91,974	18,696	13,560.0	1,742	2,613.5	85	296.3	2	105.0	20,525	16,574.8	2,476.70	19,051.5
December 2020	119,300	95,262	19,391	14,063.0	1,779	2,668.0	86	302.2	2	105.0	21,258	17,138.2	2,560.80	19,699.0
June 2021	120,767	98,551	20,085	14,567.0	1,816	2,723.5	87	305.7	2	105.0	21,990	17,701.2	2,645.00	20,346.2
December 2021	122,234	101,845	20,779	15,428.6	1,852	2,778.0	89	311.5	2	105.0	22,722	18,623.1	2,782.80	21,405.9
June 2022	123,737	104,081	21,253	15,780.0	1,876	2,814.0	90	315.0	3	157.5	23,222	19,066.5	2,849.00	21,915.5
December 2022	125,241	106,327	21,728	16,133.0	1,900	2,850.7	92	320.8	3	157.5	23,723	19,462.0	2,908.10	22,370.1
June 2023	126,781	108,568	22,202	16,485.0	1,924	2,886.7	93	324.3	3	157.5	24,222	19,853.5	2,966.60	22,820.1
December 2023	128,322	110,814	22,677	16,837.0	1,949	2,923.3	94	330.2	3	157.5	24,723	20,248.0	3,025.60	23,273.6
June 2024	129,900	113,055	23,151	17,189.0	1,973	2,953.3	95	333.7	3	157.5	25,222	20,633.5	3,084.10	23,723.6
December 2024	131,478	115,302	23,625	17,542.0	1,997	2,996.0	97	339.5	3	157.5	25,722	21,035.0	3,143.20	24,178.2
June 2025	133,095	117,543	24,099	17,894.0	2,021	3,032.0	98	343.0	3	157.5	26,221	21,426.5	3,201.70	24,628.2
December 2025	134,713	119,789	24,574	18,246.0	2,046	3,068.7	100	348.8	3	157.5	26,723	21,821.0	3,260.60	25,081.6
June 2026	136,369	122,030	25,046	18,598.0	2,070	3,104.7	101	352.3	3	157.5	27,220	22,212.5	3,319.10	25,531.6
December 2026	138,026	124,277	25,523	18,951.0	2,094	3,141.3	102	358.2	3	157.5	27,722	22,608.0	3,378.20	25,986.2
June 2027	139,724	126,518	25,997	19,303.0	2,118	3,177.3	103	361.7	3	157.5	28,221	22,999.5	3,436.70	26,436.2
December 2027	141,422	128,764	26,472	19,655.0	2,143	3,214.0	105	367.5	3	157.5	28,723	23,394.0	3,495.70	26,889.7
June 2028	143,161	131,005	26,946	20,007.0	2,167	3,250.0	106	371.0	3	157.5	29,222	23,785.5	3,554.20	27,339.7
December 2028	144,900	133,252	27,420	20,360.0	2,191	3,286.7	108	376.8	3	157.5	29,722	24,181.0	3,613.30	27,794.3
June 2029	146,683	135,492	27,894	20,712.0	2,215	3,227.0	109	380.3	3	157.5	30,221	24,476.8	3,671.80	28,244.3
December 2029	148,465	137,739	28,369	21,064.0	2,240	3,359.3	110	386.2	3	157.5	30,722	24,967.0	3,730.70	28,697.7
June 2030	150,291	139,980	28,843	21,416.0	2,264	3,395.3	111	389.7	3	157.5	31,221	25,358.5	3,789.20	28,147.7
December 2030	152,117	142,232	29,318	21,768.9	2,288	3,432.0	113	395.5	3	157.5	31,722	25,753.9	3,848.10	29,602.0

In this study, three demand variations are presented: average-day demand; maximum-day demand; and peak-hour demand. The average-day demand is the average of the daily water demands in a year. Maximum-day demand is the highest demand in a day within a year. Peak-hour demand is defined as the maximum hourly demand in a day. Past studies generally indicate an average-day to maximum-day demand ratio of 1:1.3 and an average-day to peak-hour demand ratio of 1:2. The water demand variations are shown in **Table 3-7**.

Table 3-7: Water Demand Variations

Period	Average Day Demand		Maximum Day Demand		Peak-Hour Demand	
	(m^3/day)	(Lps)	(m^3/day)	(Lps)	(m^3/day)	(Lps)
June 2018	16,474.0	190.7	21,416.20	247.9	32,948.0	381.3
December 2018	17,111.5	198.0	22,244.95	257.5	34,223.0	396.1
June 2019	17,756.9	205.5	23,083.97	267.2	35,513.8	411.0
December 2019	18,404.4	213.0	23,925.72	276.9	36,808.8	426.0
June 2020	19,051.5	220.5	24,766.95	286.7	38,103.0	441.0
December 2020	19,699.0	228.0	25,608.70	296.4	39,398.0	456.0
June 2021	20,346.2	235.5	26,450.06	306.1	40,692.4	471.0
December 2021	21,405.9	247.8	27,827.67	322.1	42,811.8	495.5
June 2022	21,915.5	253.7	28,490.15	329.7	43,831.0	507.3
December 2022	22,370.1	258.9	29,081.13	336.6	44,740.2	517.8
June 2023	22,820.1	264.1	29,666.13	343.4	45,640.2	528.2
December 2023	23,273.6	269.4	30,255.68	350.2	46,547.2	538.7
June 2024	23,723.6	274.6	30,840.68	357.0	47,447.2	549.2
December 2024	24,178.2	279.8	31,431.66	363.8	48,356.4	559.7
June 2025	24,628.2	285.0	32,016.66	370.6	49,256.4	570.1
December 2025	25,081.6	290.3	32,606.08	377.4	50,163.2	580.6
June 2026	25,531.6	295.5	33,191.08	384.2	51,063.2	591.0
December 2026	25,986.2	300.8	33,782.06	391.0	51,972.4	601.5
June 2027	26,436.2	306.0	34,367.06	397.8	52,872.4	611.9
December 2027	26,889.7	311.2	34,956.61	404.6	53,779.4	622.4
June 2028	27,339.7	316.4	35,541.61	411.4	54,679.4	632.9
December 2028	27,794.3	321.7	36,132.59	418.2	55,588.6	643.4
June 2029	28,244.3	326.9	36,717.59	425.0	56,488.6	653.8
December 2029	28,697.7	332.1	37,307.01	431.8	57,395.4	664.3
June 2030	28,147.7	325.8	36,592.01	423.5	56,295.4	651.6
December 2030	29,602.0	342.6	38,482.60	445.4	59,204.0	685.2

H. Water Quality

PLAWD water quality monitoring results at source and distribution system for year 2019 for physical-chemical test and microbiological test are shown in **Table 3-8** and **Table 3-9**. Four (4) parameters (Color, Turbidity, ph and Lead) for physical test at consumer's tap, and twelve (12) parameters (Color, Turbidity, ph, Lead, TDS, Nitrate, Arsenic, Cadmium, Iron, Manganese, Chloride and Sulfate) for chemical test at source. Water sampling for physical-chemical test were done yearly, and for microbiological test was done monthly.

Table 3-8: Physical-Chemical Test Result Summary, 2019

Consumer's Tap		Parameters				Remarks
		Color	Turbidity	pH	Lead	
Location	units	TCU/ACU	NTU	-	mg/L	
	PNSDW (2017) limits	5/10	5	6.5 to 8.5	0.01	
Tabang		1.0 TCU	1	6.94 @25°C	ND (<0.002)	Passed
Bintog		1.0 TCU	1	7.32 @25°C	ND (<0.002)	Passed
Sipat		1.0 TCU	1	6.90 @25°C	ND (<0.002)	Passed
Parulan		1.0 TCU	1	7.30 @25°C	ND (<0.002)	Passed
Bulihan		1.0 TCU	1	7.29 @25°C	ND (<0.002)	Passed
Culianin		1.0 TCU	1	7.28 @25°C	ND (<0.002)	Passed
Plaridel Heights		1.0 TCU	1	7.01 @25°C	ND (<0.002)	Passed
Sitio Santiago		1.0 TCU	1	6.98 @25°C	ND (<0.002)	Passed

Source		12 Parameters												Remarks
		Color	Turbidity	pH	Lead	TDS	Nitrate	Arsenic	Cadnium	Iron	Manganese	Chloride	Sulfate	
Location	units	TCU/ACU	NTU	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	limits	5/10	5	6.5 to 8.5	0.01	600	50	0.01	0.003	1	0.4	250	250	
Tabang		1.0 TCU	1	6.99 @25°C	ND (<0.002)	358	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	147	Passed
Bintog		1.0 TCU	1	7.28 @25°C	ND (<0.002)	402	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	170	Passed
Sipat		1.0 TCU	1	6.83 @25°C	ND (<0.002)	269	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	88	Passed
Parulan		1.0 TCU	1	7.43 @25°C	ND (<0.002)	600	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	250	Passed
Bulihan		1.0 TCU	1	6.76 @25°C	ND (<0.002)	258	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	80	Passed
Culianin		1.0 TCU	1	7.20 @25°C	ND (<0.002)	357	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	147	Passed
Plaridel Heights		1.0 TCU	1	7.20 @25°C	ND (<0.002)	124	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	ND (<0.05)	Passed
Sitio Santiago		1.0 TCU	1	6.95 @25°C	ND (<0.002)	260	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	88	Passed
Banga I (additional)		1.0 TCU	1	7.39 @25°C	ND (<0.002)	409	ND (<0.23)	ND (<0.002)	ND (<0.003)	ND (<0.05)	ND (<0.02)	22	167	Passed

Table 3-9: Microbiological Test Result Summary, 2019

JANUARY						
Sampling Location	**Date**	**Results**				
		Total Coliform	**Thermotolerant Coliform**	**Heterotrophic Plate Count (HPC)**	**Remarks**	**Re-test**
Lumang Bayan, Remedios, San Pedro	January, 31	<1.1 MPN	<1.1 MPN	160	Passed	-
Sipat Brgy. Hall, Sipat	January, 31	<1.1 MPN	<1.1 MPN	90	Passed	-
Dampol Highschool, Dampol	January, 31	<1.1 MPN	<1.1 MPN	60	Passed	-
Rueda, Rueda Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	>5700	Did not Pass	Passed
Landungin Brgy. Hall, Lagundi	January, 31	<1.1 MPN	<1.1 MPN	100	Passed	-
Sta. Monica Subd. Ibarra Villafuerte	January, 31	<1.1 MPN	<1.1 MPN	120	Passed	-
Mary Grace Subd. Aurora F. Sumulong Eatery	January, 31	<1.1 MPN	<1.1 MPN	50	Passed	-
Lalangan, Phil-Stte Guard House	January, 31	<1.1 MPN	<1.1 MPN	90	Passed	-
Agnaya Brgy. Hall, Agnaya	January, 31	<1.1 MPN	<1.1 MPN	1500	Did not Pass	Passed
Sta. Ines Bukid, Julianna Ensinas	January, 31	<1.1 MPN	<1.1 MPN	130	Passed	-
Tabang Looban, Faustino Sebastian	January, 31	<1.1 MPN	<1.1 MPN	60	Passed	-
Rocka Ville, Lito Samson	January, 31	<1.1 MPN	<1.1 MPN	150	Passed	-
Banga II, Banga II Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	60	Passed	-
Parulan, Parulan Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	100	Passed	-
Bintog, Bintog Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	1000	Did not Pass	Passed
Culianin, James Conching	January, 31	<1.1 MPN	<1.1 MPN	35	Passed	-
San Jose, Donato Jacinto	January, 31	<1.1 MPN	<1.1 MPN	60	Passed	-
Bulihan, Bulihan Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	45	Passed	-
Bagong Silang, Bagong Silang Brgy. Hall	January, 31	<1.1 MPN	<1.1 MPN	90	Passed	-
La Mirada Subd., Eliza Sangria	January, 31	<1.1 MPN	<1.1 MPN	170	Passed	-
Bangal, R Javier	January, 31	<1.1 MPN	<1.1 MPN	60	Passed	-
Poblacion, Gorgonia Mariano	January, 31	<1.1 MPN	<1.1 MPN	100	Passed	-
NHA, Rhonnel Reyes	January, 31	<1.1 MPN	<1.1 MPN	50	Passed	-

Limits:
Total Coliform <1.1 MPN/100 mL, Thermotolerant Coliform <1.1 MPN/100 mL, HPC<500 CFU/mL

FEBRUARY						
Sampling Location	**Date**	**Results**				
		Total Coliform	**Thermotolerant Coliform**	**HPC**	**Remarks**	**Re-test**
Rueda Saklolo, Tabang Looban	February, 28	<1.1 MPN	<1.1 MPN	160	Passed	-
Premitivo, Rocak Ville	February, 28	<1.1 MPN	<1.1 MPN	220	Passed	-
Aurella Guid, Banga II	February, 28	<1.1 MPN	<1.1 MPN	35	Passed	-
Alkaras, Parulan	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Rodolfo Aguino, Bintog	February, 28	<1.1 MPN	<1.1 MPN	160	Passed	-
Michael Ventura, Culianin	February, 28	<1.1 MPN	<1.1 MPN	180	Passed	-
Celirina Agullar, San Jose	February, 28	<1.1 MPN	<1.1 MPN	200	Passed	-
Brgy. Hall Bulihan, Bulihan	February, 28	<1.1 MPN	<1.1 MPN	100	Passed	-
Glean Ubibid, Bagong Silang	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Kayabyab, La Mirada Subd.	February, 28	<1.1 MPN	<1.1 MPN	170	Passed	-
Jacob Kuldero, Banga I	February, 28	<1.1 MPN	<1.1 MPN	70	Passed	-
Sabino Lazana, Poblacion	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Remedios San Pedro, Lumang Bayan	February, 28	<1.1 MPN	<1.1 MPN	160	Passed	-
Sipat Brgy. Hall, Sipat	February, 28	<1.1 MPN	<1.1 MPN	220	Passed	-
Rhonnel Reyes, NHA	February, 28	<1.1 MPN	<1.1 MPN	35	Passed	-
Dampol Highschool, Dampol	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Rueda Health Center, Rueda	February, 28	<1.1 MPN	<1.1 MPN	180	Passed	-
Lagundin Brgy. Hall, Lagundi	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Sta. Monica Subd. Ibarra Villafuerte	February, 28	<1.1 MPN	<1.1 MPN	180	Passed	-
Mary Grace Subd. Rafael Isagunde	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Lalangan, Phil-Stte Guard House	February, 28	<1.1 MPN	<1.1 MPN	35	Passed	-
Agnaya Brgy. Hall, Agnaya	February, 28	<1.1 MPN	<1.1 MPN	60	Passed	-
Sta. Ines Bukid, Juliana Ensinas	February, 28	<1.1 MPN	<1.1 MPN	160	Passed	-

Limits:
Total Coliform <1.1 MPN/100 mL, Thermotolerant Coliform <1.1 MPN/100 mL, HPC<500 CFU/mL

I. Description of the Proposed Subproject

PLAWD's Water Supply Improvement Project includes: (i) construction of storage facilities with booster; (ii) construction of office building/ warehouse/ motorpool; (iii) laying of transmission/distribution pipelines, and; (iv) procurement of power generating sets and service vehicle.

Storage Facilities with Booster. The storage facilities will be located in Brgy. Banga 1 and Brgy. Rueda. The proposed lots are already owned by PLAWD.

The two (2) 1,500 m³ storage facilities (ground reservoirs) will be constructed with booster pumping stations. The booster pumping stations will be provided with appropriate electro-mechanical equipment (vertical multi-stage centrifugal pump and motor with variable frequency drive) complete with the necessary controls, cables, piping assembly, other electrical component, power generating set, distribution transformers and pump house with perimeter fence. The amount allotted for the electro-mechanical equipment includes materials, delivery and installation cost, civil works, commissioning and testing costs. The cost allocated for the reinforced concrete ground reservoirs and pump houses with perimeter fences includes earthworks, concrete works, metal works, paintings and minor site development. Please see **Annex 3** for the details of the storage facilities.

Office building/ warehouse/ motorpool. The proposed new office building/ warehouse/ motorpool will be located in Brgy. Bintog where Pumping Station No. 3 is located. The proposed lot with a total of 1,190 sq. m. is already owned by PLAWD.

Transmission and Distribution Pipelines. A total of about 28,236 linear meter (lm) of transmission/distribution pipelines with sizes ranging from 150-500 mm uPVC and steel pipes will be installed in preparation for the infusion of additional supply from the Bulacan Bulk Water of Luzon Clean Water Development Corporation and to reinforce the existing distribution system to improve the pressure within the system (see **Figure 3-4**). The amount allotted for this item covers materials and labor costs which include excavation and backfilling, disinfection and flushing.

Pipelaying will be within the road right-of-way.

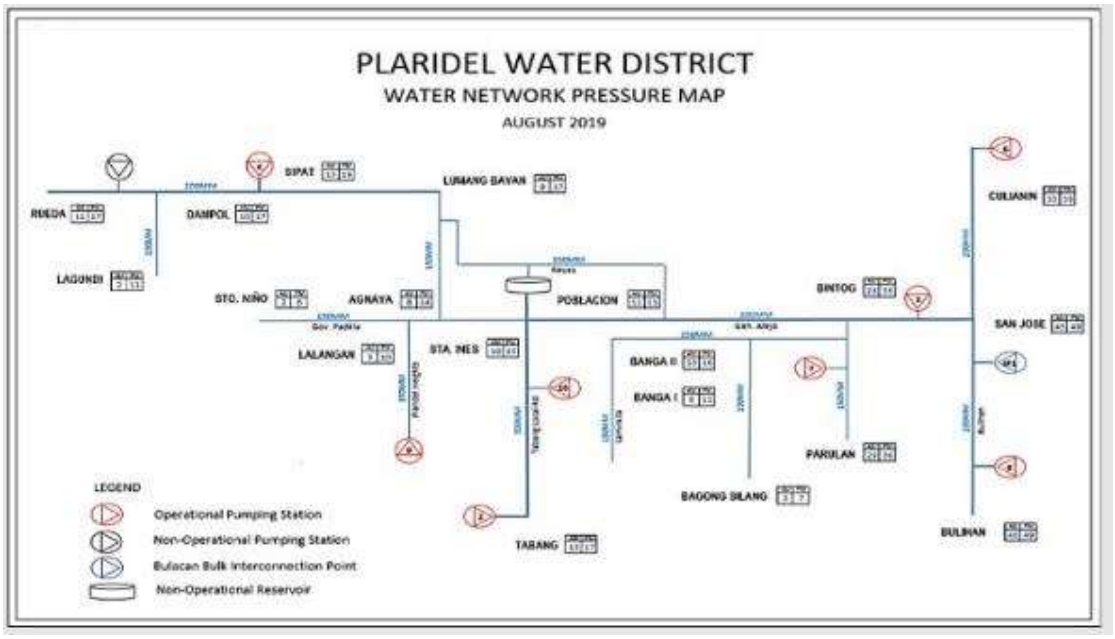


Figure 3-4: PLAWD Water Network Schematic Map

Power Generating Sets and Service Vehicle. Three (3) units of 60 kVA power generating sets will be purchased and installed in three (3) existing pumping stations of PLAWD that does not have a stand-by power generating set. The recipient barangays for three (3) power generating sets are Brgys. Sitio Santiago, Bulihan and Parulan. The generating sets are of close/silent-type with enclosure. The cost allotted for this item includes materials, equipment and labor costs, overhead, contingency and miscellaneous costs, profit and taxes.

One (1) commuter van service vehicle will also be acquired.

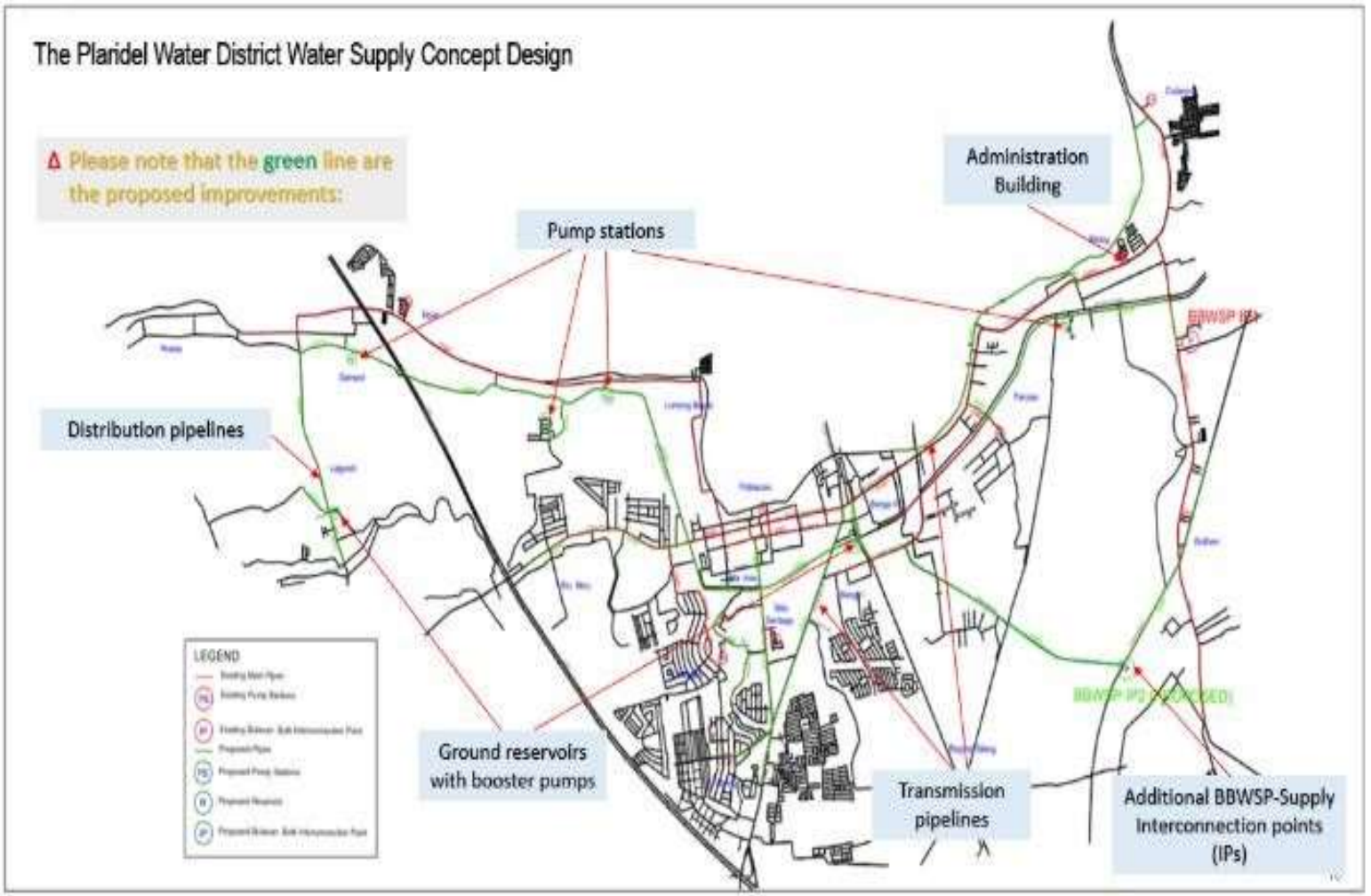


Figure 3-5: Recommended Improvements for PLAWD

4 DESCRIPTION OF THE ENVIRONMENT

This section discusses the baseline conditions of the environment of the Municipality of Plaridel, where the proposed improvements for water supply subproject are located. Upon assessment of the subproject sites, there are no identified ecologically/environmentally critical areas, historical/cultural sites within or near the subproject sites.

A. Physical Resources

Geographical Location. Plaridel is a landlocked municipality in the coastal provinceof Bulacan. The municipality is situated in the mid-western section of the province of Bulacan.It is bounded on the north by the municipality of Pulilan, on the northeast by the municipality of Bustos, on the east by the municipality of Pandi, on the southeast by the municipality of Balagtas, on the south by the municipality of Guiguinto, on the southwest by the City of Malolos and on the west by the municipality of Calumpit.

Land Area. Plaridel has a total land area of 3,244 hectares (ha) encompassing 19 barangays.

Air Quality and Noise. Bulacan-Pampanga-Bataan is officially designated by DENR as a regular "airshed" which is defined as areas with similar climate, meteorology and topology which affect the interchange and diffusion of pollutants in the atmosphere. The National Air Quality Status Report (2008-2015) provides data on air quality on a regional level. As of 2015, there were 93 air quality monitoring stations (manual and real-time) nationwide which were situated in highly urbanized cities and also rural areas in different regions of the country. These monitoring stations keep track of criteria air pollutants including total suspended particulates (TSP), particulate matter with dia of less than 10 microns (PM10), particulate matter with dia of less than 2.5 microns (PM2.5), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and ozone (O_3) following the National Ambient Air Quality Guideline Values (NAAQGV).

Table 4-1 presents the measured annual mean values of air quality parameters in Region 3, specifically in Bulacan, from 2008-2015. From 2008-2014, one (1) monitoring station located in Saluysoy Stn. continuously measured the annual TSP while one (1) monitoring station located in Intercity Stn. measured the annual TSP from 2011-2012 and 2014-2015. Based on the measured TSP from 2008-2015, the air quality within Region 3 does not comply with the NAAQGV limits. The high TSP readings in Saluysoy Stn. is brought by open burning of solid waste, vehicular emissions, and presence of several legal and illegal smelting plants. On the other hand, Intercity Stn. is located in an industrial area composed of around 90 units/sets of multi-pass rice milling machines owned by about 60 operators.

Due to the high TSP readings, it was recommended by the DENR Air Quality Management Section to implement more stringent monitoring and penalty system by the local government to improve the air quality in the area.

Table 4-1: Air Quality Parameters Annual Mean Values in Region 3 (2008-2015)

Air Quality Parameter/ Station Location	NAAQGV Limit	2008	2009	2010	2011	2012	2013	2014	2015
Saluysoy Stn., Meycauayan, Bulacan									
TSP (µg/Ncm)	90 (annual)	106	124	61	21	14	6	41*	n.d.
Intercity Stn., Bocaue, Bulacan									
TSP (µg/Ncm)	90 (annual)	n.d.	n.d.	n.d.	344	277	n.d.	482*	244

Source: DENR-EMB,2015

Red font means failure to comply with NAAQGV Limit
n.d. means no data
**did not meet required capture rate*

As per DENR Air Quality Management Section, the National Air Quality Status Report (2015-2020) is currently being drafted.

An Environmental Impact Assessment (EIA) Study was conducted by the Japan International Cooperation Agency (JICA) in 2017 for the Plaridel Bypass Road Project. The study presented baseline noise levels in the Municipality of Plaridel, specifically in Barangays Tiaong, Bulihan, Camachilihan, and Malamig. During daytime, noise levels range from 59.5 – 90.0 dbA that is beyond the National Pollution Control Commission (NPCC) and IFC-EHS noise guidelines which may be attributed to noises coming from residential areas as well as busy streets.

Noise level measurements will be done during detailed design phase at strategic locations on the areas with sensitive receptors to establish ambient baseline noise levels. The results will be included in the CEMP.

In addition, following the IFC-EHS noise guideline values, noise levels should ideally not exceed the values presented in **Error! Reference source not found.**. If, however baseline noise levels already exceed the guideline values, IFC-EHS allows a maximum 3 dB(A) increase in noise levels as a result of project activities. Mitigation measures should be implemented to ensure this.

Table 4-2: IFC-EHS Noise Level Guidelines

Receptor	One Hour L_{Aeq} (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

Climate. The Municipality of Plaridel generally falls under Type I category of the Philippine Climate Corona Classification. Areas with this type of climate have distinct pronounce wet and dry seasons. The months of June to November are considered rainy season period with rainfalls ranging from 1,000 mm to more than 5,000 mm.

Topography. The land topography of Plaridel is mostly flat with a difference of elevation from 5 to 15 meters above mean sea level (mamsl). Although municipality comprises mostly of agricultural lands covering more than 60 percent of the total land area but because of its accessibility to the Metropolitan Manila area, Plaridel is fast becoming developed and highly-urbanized.

Geology and Soils. The geologic formation of Plaridel is Ancient Alluvium and Angat River is Recent Alluvium.

Plaridel lies on the alluvial sediment plain of the Angat River which makes it particularly fertile and well suited for farming with soil textures of fine sandy loam, Prensa silty clay loam, Quingua silty loam, and Bigaa clay loam (Municipality of Plaridel CLUP, 2012).

The geo-resistivity surveys were carried out by Aqua-Dyne Technological Service, Inc. in April 2013 for six (6) selected areas/barangays in the Municipality of Plaridel. These areas/barangays were Poblacion-Jubilee Homes, Bagong Silang, Bulihan, Kagalakan Village, Lagundi, and Sta. Ines Bukid.

Previous geologic studies of the region identified three different types of Quaternary alluvial deposits. Two of these units occur in Plaridel. The sediments exposed along AngatRiver consist of medium to coarse grained sand with gravel, pebbles and silty clay to clay. They are normally less than 50 m thick.

Away from the present course of Angat River, older floodplain deposits occupy the generally flat land. They consist of coarse fragments such as cobbles and gravel. Theyare poorly consolidated and unsorted with a sandy to clayey matrix. Estimates of the thickness vary from 100 to 200 m.

Below the alluvial deposits lie the tuffaceous sedimentary rocks belonging to the Guadalupe Formation. This formation is composed of two units, namely: the Alat conglomerate and the Diliman Tuff. The Alat conglomerate has not been encountered in Plaridel. The tuff consists of fine-grained vitric tuff and volcanic breccias at the lower section but its upper section is composed of medium-grained tuffaceous sandstone. It is better sorted than the lower section and loosely cemented. Previous workers estimate the thickness of the Guadalupe Formation at 1,300 to 2,000 m.

Alluvium (from the Latin alluvius, from alluere, "to wash against") is loose, unconsolidated (not cemented together into a solid rock) soil or sediment that has been eroded, reshaped by water in some form, and redeposited in a non-marine setting. A general term for clay, silt, sand, gravel or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water. The recent alluvium is topped by well drained soils that remain moist through seepage and capillarity during the dry season; they are prime agricultural land. On average, surface soil nutrient content is highest in the alluvium, lowest in granite and intermediate in sedimentary soils.

Water Resources. Plaridel is a non-coastal area of Bulacan. It is surrounded with the rivers of Angat, Bulacan and Tabang River, both of which run through the town. The Angat River, otherwise known as Bulacan River, flows directly to Calumpit, Bulacan, meeting the Pampanga River. The Tabang River, a tributary with adjoining intersections dividing the middle of the present Poblacion of Plaridel, flows to the Manila Bay after passing through thetowns of Guiguinto and Bulakan. The water of this river was called "tabáng" to refer to its freshwater.

The present source of water supply for domestic, commercial and institutional demands in the Municipality of Plaridel is groundwater through wells and infusion of 2 Million Liters per Day (MLD) from Bulacan Bulk Water of Luzon Clean Water Development Corporation.

PLAWD has eight (8) operational pumping stations (wells) and have a total combined discharge of around 293 liters per second (Lps). The wells have diameter ranging from 100 to 150 millimeters (mm), depths ranging from 52 to 185 meters (m) and discharge capacities ranging from 24 to 67 Lps.

B. Economic Development

Municipality Income and Expenditures. According to the Bureau of Local Government Finance, the annual regular revenue of Plaridel for the fiscal year of 2016 was Php255,934,254.40. The income of Plaridel is generally derived from locally sourced revenues, internal revenue allotment and other shares from national tax collection. Expenditures of the local government are divided among general administration, capital outlays and development/improvement projects.

Land Use. Plaridel total land area is 4,250 ha. The Existing Land Use consists of 1,510.65 ha for agricultural Land; 899.5 ha for industrial, commercial, and residential; 712.11 ha for idle land and open space; and 973.34 ha for creeks.

The existing urban land use total area is 1,611.65 hectares (ha), of which, 149.47 ha for commercial, 478.58 ha for residential, 197.17 ha for institutional, 74.32 ha for infrastructure/utilities; and 712.11 has. for idle land, vacant lot and open space.

Commerce and Trade. Plaridel, within the province of Bulacan, is classified as an "Agro-Industrial" municipality; its proximity to Metro Manila makes it a major rice and vegetable producer contributing to national as well as local food supply. Plaridel's resource and economic interconnectivity with the rest of Bulacan and Manila increases the municipality's reliance upon its physical assets and ecosystem services such as food supply.

The 11 industrial estates and five (5) commercial establishments (malls and supermarkets) are mostly concentrated in areas like in Brgy. Banga II and Bulihan, such as the Grand Industrial Estate and Bulihan Industrial Park, respectively. While others were found along Plaridel By-Pass Road in Brgy. Bagong Silang. Commercial areas are mostly intermixed with residential areas but a bigger concentration of which could be found in Brgys. Banga I, Banga II, Poblacion and Tabang. Prominent malls and supermarkets can also be found in Plaridel like the Waltermart Mall, Puregold, Primark, Novo and SM Save More. These are the biggest commercial concessionaires of PLAWD. The most common business establishments in the barangay are sari-sari stores and carenderia or small restaurants.

Transportation. The municipality can be reached by land and it has several routes plying to and from the municipality daily. Land transportation can be availed of through passenger buses, jeepneys, private cars and vans. Within the municipality, one can take tricycles, jeepneys, multicabs and motorcycle for remote barangays.

Power Sources and Transmission. Electricity is supplied by the Manila Electric Company (MERALCO) for the entire populace of Plaridel Municipality covering 19 Barangays. Actually, MERALCO Plaridel Sector has an office located in Gov. Padilla Street in Barangay Agnaya, Plaridel, Bulacan.

Agricultural Development. The municipality's total land area covers 4,250 ha and out of that, 1,510 ha are used for agriculture, which is approximately 36% of the total land area. Plaridel has a history of agricultural production as a main source of livelihood for its population. Agricultural activities consist predominantly of rice production, both in terms of area coverage, volume, and value of production. Up until 2000, Plaridel was considered as primarily engaged in agriculture on the basis of its existing land use. However, it is becoming progressively more urban as its proximity to Manila has stimulated its population growth and land development.

Tourism Facilities. Filipinos are well-known to be courageous and freedom lovers. The people of Plaridel are no exception. The marker commemorates the historic Battle of Quingua (Plaridel at present) where the Filipinos triumphed over the American forces in their fight for freedom. Likewise, it also commemorates the death of Col. John Stotsenberg—a prominent figure of the Philippine-American war.

C. Socio-Economic Resources

Population and Community. Plaridel is first class Municipality of the Province of Bulacan. It has a total land area of 3,244 ha encompassing 19 barangays. The population of Plaridel is around 107,805 according to the National Statistics Office (NSO) 2015 census with a population density of around 3,300 per km². Plaridel's population represents 3.27% of the total

population of Bulacan Province and 0.96% of the total population of Central Luzon. Plaridel is composed of nineteen (19) barangays with population shown in **Table 4-3**.

Table 4-3: Summary of Population in the Project Area, 2015

	Name of Barangay	Total Population	Growth Rate (%)
1	Agnaya	2,585	2.4
2	Bagong Silang	3,322	3.1
3	Banga I	7,030	6.5
4	Banga II	9,036	8.4
5	Bintog	4,122	3.8
6	Bulihan	5,721	5.3
7	Culianin	4,130	3.8
8	Dampol	3,183	3.0
9	Lagundi	4,243	3.9
10	Lalangan	2,077	1.9
11	Lumang Bayan	5,361	5.0
12	Parulan	7,590	7.0
13	Poblacion	3,901	3.6
14	Rueda	1,803	1.7
15	San Jose	4,448	4.1
16	Sta. Ines	2,953	2.7
17	Sto. Nino	10,761	10
18	Sipat	5,856	5.4
19	Tabang	19,683	18.3
Total Population		107,805	

Source: Philippine Statistics Authority (PSA), 2015

Public Health and Sanitation. The Municipality of Plaridel and PLAWD is planning to have a septage treatment plant (STP) in the future. A meeting was held on 29 January 2020 at Municipal Hall of Plaridel together with CEST Consultants and discussed the plan of having STP based on the Supreme Court Mandamus issued regarding Manila Bay Clean-Up. The Consultants as part of their services will conduct a Feasibility Study for the Identification of Concept Designs for Sanitation Project, this is a project of LWUA that aims to develop feasibility studies that would lay out cost-effective and result-oriented sanitation project to selected Water Districts through the National Sewerage and Septage Management Program (NSSMP). Presently, the municipality has no sanitary sewer system.

The accessibility of each household to safe water and sanitary toilet facility is one determinant of the health condition of the population. All nineteen (19) barangays of the municipality are servicing safe water supply although some barangays were experiencing low water pressure during peak hours. On the other hand, based on Bulacan Provincial Development and Physical Framework Plan 2014, Plaridel has a total household (HH) of 23,877 with access to sanitary toilet or 96.38% out of 24,774 households. Likewise, a total of 897 HH without access to sanitary toilet or 3.62%.

Every household, industry and consumers must have access to safe water and sanitary toilet facilities. Thus, the objective of improved access to water and sanitation will promote healthier conditions of the citizens which in turn would constitute to increased productivity of the people, reducing the level of poverty and eventually lead to growth of the economy.

Basic health facilities in 2013, Plaridel has two (2) Rural Health Units (RHU) and nineteen (19) Barangay Health Stations (BHS). The municipality also had the Plaridel Infirmary, a Bulacan

Medical Center Annex, four (4) private hospitals and fifteen (15) private medical clinics that cater to the healthcare needs of the populace.
The malnutrition in the municipality of Plaridel and province as a whole is relatively low for the past years. The poor health seeking behavior of some mothers attributed to maternal and infant death. The maternal mortality rate in 2008 have showed a significant increase at 0.70 which is considered to be the highest for the past seven years. On the other hand, infant mortality showed a decreasing trend over the years and the leadings cause is pneumonia.

Solid Waste Management. The issue on waste is directly related to human health. A clean environment is not only conducive to settlement but attracts economic investors to establish business and employment opportunities as well. Thus, solid waste management must be strictly monitored and implemented. In 2007 figure, a total volume of waste generated per day in municipality was 72.71 m³. Out of the total 19 barangays, only 16 barangays were served by waste collection system.

Material Recovery Facility (MRF) is a specialized plant that segregates solid wastes and prepares recyclable materials that can be sold to market. MRF includes a solid waste transfer station or sorting station, drop off center, a composting facility and a recycling facility. The Municipality of Plaridel has one municipal MRF and 18 barangay MRFs located in each barangay. The MRFs play an important role protecting the ecosystem services of Plaridel by ensuring that solid waste is managed effectively and is kept off public roads and amenities and out of irrigation canals and waterways. The Municipal Environment and Natural Resources Office (MENRO) takes primary responsibility of operating the Municipal MRF and managing solid waste. Currently, the municipal MRF processes all organic wastes and converts these collected materials to organic compost, which is distributed to and used by local Plarideleno farmers. Barangay level MRFs are collection sites for non-organic wastes that are sorted and then transported to the landfill in Tarlac in Central Luzon. [1]

Literacy Rate. The literacy rate in the municipality and the province as a whole exhibited a decreasing trend from 1990 to 2000 surveys. The 97.6 percent literacy rate in 1994 has decreased by almost 2 percentage points in 2000 (95.87). Thus, one out of 10 of the population basically cannot read and write. Although it remains to be above the average norm, the remarkable deterioration of the literacy rate should not be disregarded.

Socio-economic Conditions. In 2015, all regions in the country showed an increase in the average annual family income. The annual average income for Region 3 was higher than the national average by as much as 12 percent. It is also the third among the regions with high average income per family. These estimates by the National Statistics in 2015 indicate that the province of Bulacan is above the average in terms of the levels of living condition in the country.

The employment in Bulacan has been decreasing in the past years. This was due to rapid increase of the labor force against a low rate in the jobs generated. Majority of the jobs generated were in the non-agricultural sector which are the service and industry sector.

The literacy rate exhibited a decreasing trend based on the past surveys. However, the latest survey at the rate of 95.87 for the province, it is ranked second in Central Luzon and higher than the national rate.

5 ANTICIPATED IMPACTS AND MITIGATION MEASURES

[1] Eliana Chia, Gabrielle Esser and Frankie Mao, Plaridel: Imagining A Sustainable & Resilient Future (University of British Columbia's School of Community and Regional Planning, 2013), 35.

This section assesses the impacts of the proposed activities on various environmental components of the subproject site.

Methodology. Anticipated impacts to be considered were assessed through the following activities: (i) gathering of inputs from interested and affected parties through consultation; (ii) desktop research of information relevant to the proposed project; (iii) site visit and professional assessment; and (iv) evaluation of proposed design and potential impacts. Categorization of the project and formulation of mitigation measures have been guided by ADB's REA Checklist for Water Supply (**Annex 1**) and SPS.

A comprehensive screening of environmental impacts is carried out through assessment of general parameters associated with water supply projects against the components of the proposed PLAWD subproject and the environment where the facilities will be constructed. A screening checklist was adopted using previous ADB IEE Reports which was developed using various sources such as DENR checklists, ADB's REA Checklist, and World Bank Environmental Source Book. Some items of the checklist may not be applicable to this particular subproject, however, they are still included to indicate its relevance in the screening process.

Impact Assessment. The assessment is made on the following phases of the subproject: (i) pre-construction, (ii) construction, and (iii) operation and maintenance. Results of the environmental impacts screening are summarized in

Table *5-1* which shows the impact types and magnitudes for both positive and negative impacts without the mitigating measures and the resulting situations when mitigating measures will be implemented. Discussions of each issue are presented in the succeeding sections. For ease of identification, a summary of the environmental impacts that should be included in the Environmental Management Plan (EMP) is presented at the end of this section (see **Table 5-4**)

Due to the subproject's relatively long operational life, decommissioning or closure in the near or medium term (e.g., 25-50 years) is not envisaged. Furthermore, environmental impacts arising from decommissioning of the proposed PLAWD facilities are deemed to be minimal such as: (i) residual waste cleanup is not a major concern since the facilities are not industrial manufacturing plants with potential problems for toxic and hazardous wastes, and (ii) solid wastes from decommissioning is also not a major concern since the structures are mostly made of reinforced concrete and the solid wastes are mostly recyclable materials such as broken concrete materials, reinforcing steel bars used in the structures, structural steel, roofing materials, electrical wires, etc. In the event that decommissioning becomes an option, the appropriate action plan will be drawn up in accordance with the regulatory requirements of the Philippine Government.

Table 5-1: Summary of Environmental Impacts Screening

Environmental Impacts and Risks	Without mitigation	With Mitigation
PRE-CONSTRUCTION PHASE		
Encroachment to environmentally sensitive areas	n.a.	n.a.
Impacts and risks to biodiversity conservation	n.a.	n.a.
Encroachment to historical areas and cultural areas	n.a.	n.a.
Potential competing use of water resource	n.a.	n.a.
Potential nuisance and problems to the public	● -	Δ
Interruption of other utility services	● -	Δ
Loss of assets (IR concerns)	n.a.	n.a.

Environmental Impacts and Risks	Without mitigation	With Mitigation
CONSTRUCTION PHASE		
Modification of construction site topography	Δ -	Δ
Displacement of rare or endangered species	n.a.	n.a.
Soil erosion and sediments of construction sites	● -	Δ
Nuisance/ public inconvenience in pipe laying	● -	Δ
Noise from construction equipment	● -	Δ
Local air pollution due to construction activities	● -	Δ
Oil and other hazardous materials releases	Δ -	Δ
Vehicular traffic congestion and public access	● -	Δ
Hazards to public due to construction activities	● -	Δ
Pollution and health risk due to workers camp	● -	Δ
Increase employment opportunity in work sites	● +	● +
Improper closure of construction sites	● -	Δ
OPERATION AND MAINTENANCE PHASE		
Health hazard due to delivery of poor water quality	● -	Δ
Pollution from increased generation of sewage and sullage	● -	Δ
Noise and air pollution of pumping stations	Δ -	Δ
Ground subsidence due to over-pumping	n.a.	n.a.
Waste generation of filter beds (backwash)	n.a.	n.a.
Pumping stations operational risk and safety	n.a.	n.a.
Water treatment facility operational risk and safety	n.a.	n.a.
Increase employment opportunities	Δ +	Δ +
Future scarcity of water and conflict in water uses due to climate change	n.a.	n.a.

Legend: n.a. = not applicable; Δ = insignificant; ● = significant; + = positive; - = negative

Table *5-2* presents the summary of government environmental compliance documents needed by the sub-project before commencement of construction works, during construction and during operation.

Table 5-2: Summary of Government Environmental Compliance Documents for Water Supply Subproject

Stage of Development	Regulatory Permit	Issuing Agency	Applicable Legislation
Pre- construction	ECC	EMB Regional Office	PD 1586 and its implementing rules and regulations
Construction	Permit to Cut Trees	DENR - Regional Office	PD 705
	Clearing/Fencing/ Excavation Permit	LGU	LGU Ordinance
Operation	Permit to Operate Source Emission Installation (Generator sets)	EMB Regional Office	RA 8749 and its implementing rules and regulations
	Compliance with DOH for Philippine National Standards for Drinking Water (PNSDW) 2017		DOH AO 2007-0012

A. Design/ Pre-Construction Phase Considerations

Encroachments. PLAWD subproject's components will not be located in areas that are environmentally sensitive and areas with historical and cultural importance. The proposed

sites for source development are along residential and commercial areas while the proposed route of the pipelines is along the road right-of-way.

There are no known archaeological and cultural assets in these proposed sites. Nevertheless, precautions will be taken to avoid potential damage to any archaeological and cultural assets by inclusion of provisions in tender and construction documents requiring the contractors to immediately stop excavation activities and promptly inform the authorities if archaeological and cultural assets are discovered. Under the Cultural Properties Preservation Act (Presidential Decree No. 374) in the event that excavators shall strike upon any buried cultural property, suspension of excavation is inevitable and it shall be reported immediately upon occurrence of the event to the Director of the National Museum and shall then take appropriate actions with regards to the matter. The suspension can only be lifted by the Director of the National Museum. Accordingly, in case of archeological, historical, cultural chance finds, in order to avoid damage to cultural properties, the following steps should be observed: (i) detailed design of all civil works will be located away from all cultural/ archeological/historical properties; (ii) procedures for chance finds of valued relics and cultural values will be stipulated in the contract with contractors in order to avoid damaging such valuable properties; (iii) site supervisors will be on the watch for chance finds; (iii) upon a chance find, all work will be stopped immediately, find will be left untouched, and notify PLAWD who in turn will notify the National Museum; (iv) work at the find site will remain suspended until the National Museum allows work to resume.

Impacts and Risks to Biodiversity Conservation. There are no identified impacts and risks to biodiversity conservation since the PLAWD subproject's components will not be located in areas that are environmentally sensitive. The sites are not in undisturbed landscapes and over the years the ecological changes due to human activities in the area have resulted to the present residential and commercial landscapes.

Competing Use of Water Resource. Issues on competing use of water resources are not expected since PLAWD's water supply subproject covers installation of ground reservoir and pipelines, not source development.

Nuisance and Problems to the Public. Potential nuisances and problems coming from the public during construction can be avoided and immediately addressed through consultation and information dissemination to potentially affected people during detailed design and pre-construction phase. Tender documents shall include provisions addressing potential nuisances and problems from the nearby community during construction including environmental management provisions on the following issues: (i) erosion and sediment runoff, (ii) noise and dust, (iii) vehicular traffic, (iv) construction wastes, (v) oil and fuel spillages, (vi) construction camps, and (v) public safety and convenience.

Interruption of other utility services. Some existing utility services could be temporarily interrupted during construction especially co-located utility lines and may cause inconvenience to the public.

Mitigation. Prior to construction works, the contractor shall coordinate with respective offices in acquiring required clearances with regard to electricity, telephone lines, and other utilities/structures that may be affected. These shall all be reflected in the construction contracts.

Loss of Assets. The proposed project will not entail any involuntary resettlement and there are no adverse impacts on surrounding structures since the location of proposed project components were already acquired by PLAWD.

Climate Change Resilience. While the project aims to improve resilience to climate change by upgrading and/or expanding the existing water system, the system itself may be vulnerable to climate change effects. In particular, raw water supplies (i.e. groundwater) may be exhausted and/or heavy soil (and other phenomena) that impact the delivery system's structural integrity. This can be mitigated by conducting a suitable study to determine the availability (or abundance) of raw water, especially under extremely dry weather conditions. Similarly, the thorough engineering design (DED) will ensure the choice of suitable piping delivery materials to minimize possible ground heave effects (and other related phenomena).

Likewise, relevant engineering specifications are implemented to tackle certain natural hazards (e.g. flood, earthquake). The construction parameters applicable to the identified level of risk will be taken into account in all civil works. Disaster risk mitigation measures will include, among other things, sufficient structural foundation elevation to account for projected or estimated flood depths (i.e. 50-year return period for catchment areas less than 40 km^2, and 100-year return period for catchment areas more than 40 km^2); avoid areas of known seismic risks (e.g. fault lines) as component locations; and ensure structural design complies with applicable standards / codes (*i.e.* 2015 National Structural Code of the Philippines (NSCP) and the latest edition of the American Water Works Association (AWWA). During the DED stage, these measures will be examined in detail.

B. Construction Phase Environmental Impacts

Prior to the commencement of construction activities, the civil works contractor is required to submit a Contractor's Environmental Management Plan (CEMP) which is a refinement of PLAWD subproject's initial EMP. The proposed mitigation in the initial EMP may be further modified or enhanced in the CEMP to make it more site-specific. The CEMP requirements are further discussed under the Environmental Management Plan (EMP) section.

Site Preparation. Installation of ground reservoirs and pipe laying will not involve modification of the construction site topography. Water supply pipelines will follow as much as possible the existing site contour. This issue is therefore considered not significant.

During vegetation clearing, there are a total number of 18 trees affected.

Table 5-3: Trees Affected during Site Preparation

Project component/ Location	Trees affected	Diameter
Office building/ Brgy. Bintog	6 mango trees	25-60 cm
	1 mahogany tree	60 cm
Storage facility/ Brgy. Rueda	4 hawaiian trees	20-23 sm
	3 santol trees	42-50 cm
	2 calamansi trees	26-44 cm
	1 avocado tree	18 cm
	1 caimito tree	15 cm
Total	**18**	

Mitigation. Prior to any clearing operations, a tree inventory following the guidelines and requirements of the DENR will be conducted as part of the application for a tree cutting permit. The project effects shall be mitigated, directly or indirectly, through planting of the corresponding number of seedlings as prescribed by the tree cutting permit. The owners of the trees especially fruit-bearing trees must be properly compensated. In addition, the Project-affected trees qualified for earth-balling shall be properly transplanted to minimize the biomass removal and attenuate the GHG emissions.

Soil Erosion and Sediment from Construction Sites. During rainy seasons, exposed soil at the construction site can easily be eroded and carried to the natural drainage system if preventive measures are not established.

Mitigation. In preventing erosion, surface runoff must be controlled using structural erosion prevention and sediment control practices which will divert the storm water flows away from the exposed areas, prevent sediments from moving offsite, and reduce the erosive forces of runoff waters. The interceptor dike will ensure that storm water will be discharged to proper channels and will not affect adjacent areas. These measures must be established by the contractor: (i) interceptor dikes, (ii) pipe slope drains, (iii) straw bale barriers, (iv) sediment traps, and (v) temporary sediment basins. Whenever possible, total exposed area shall be minimized.

Nuisance/Public Inconvenience during Pipelaying. The prolonged period of water supply service interruptions during pipelaying works may result to public inconvenience. Dumping of construction materials and solid wastes in water bodies will also cause nuisance to the public aside from affecting water quality and the flow regime. Digging activities will also cause inconvenience and may restrict public access to subproject areas.

Mitigation. The contractor shall be required to perform the following: (i) installation or replacement of pipes within the shortest time possible to minimize water supply cut-off periods and/or use of night time schedules, as well as announcement of water supply interruptions two (2) to three (3) days prior to actual cut-off, and; (ii) avoid dumping of earth, stones, and solid wastes in water bodies to avoid adverse impact on water quality and flow regime.

Restriction of access to the site must be done through a combination of institutional and administrative controls, including fencing, signage, and communication of risks to the local community.

Construction Noise. Potential sources of noise may come from vehicles and construction equipment, which can generate noise of 80 dB(A) from a distance of 30 m while loud noise from sources such as blasting are not anticipated. Residential structures are identified as receptors during the construction of ground reservoirs, and pipelaying.

Mitigation. Exposure of receptors to increased noise levels can be lessened by scheduling construction during daytime only. In areas near residential areas or noise sensitive sites, noisy equipment shall not be operated during nighttime to early morning (22:00H – 06:00H). The use of noise suppressors (mufflers) in equipment and vehicles is also recommended. Workers using noisy equipment shall be provided with earplugs as well.

Ambient baseline noise levels will be established at designated strategic locations with sensitive receptors. In case baseline noise levels already exceed the guideline values, IFC-EHS allows a maximum 3 dB(A) increase in noise levels as a result of project activities. Mitigation measures may be adjusted in the CEMP based on the baseline noise levels.

Local Air Pollution Due to Construction Activities. Piles of sand, gravel and waste materials that would be generated during trenching, earthworks, and soil preparation activities can contribute to the total suspended particles in the air. Machineries and heavy equipment used in the construction will also account for vehicular emissions during construction. Without any mitigating measures, dust generation could be significant during dry periods.

Mitigation. Machineries and heavy equipment used in the construction must be regularly maintained and operated and must comply with the requirements of the Clean Air Act regarding vehicle emissions. Piles of sand, gravel and waste materials that would be

generated during site clearing should be watered frequently to prevent dust particles from affecting nearby areas. Covers for open stockpiles shall be required to prevent dust generation due to the wind current. Vehicles transporting loose construction materials such as sand, gravel, spoils, and the like shall be provided with tarpaulin cover as well.

Oil and other hazardous materials releases. Aside from the use of fuel, oil, and grease for heavy equipment and vehicles during construction works, the use of paints and solvents may be expected as well. Impacts relating to accidental release of these materials are considered to be insignificant since expected quantities will be relatively small. However, as part of good construction practice, the contractors will be required to conduct an awareness program for all workers regarding the prevention and management of spills and proper disposal of used containers. Fuel and oil shall be stored in a designated secured area provided with an impermeable liner to prevent the accidental spills from seeping into the ground. Management of spills and proper disposal of used containers shall be included in the CEMP.

Vehicular Traffic Congestion and Public Access. Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages in heavily traveled highways and narrow streets are not planned and coordinated. Potential traffic congestion is expected due to construction activities since pipe-laying and interconnection activities are located near major roads or intersections.

Mitigation. A traffic management plan shall be included in the CEMP. The traffic management plans which may include traffic diversion schemes should be properly coordinated with the LGU and the local office in charge of traffic management. Prior to implementation of the traffic re-routing plan, the public must be informed in advance. The method of informing the public would be left to the discretion of the proponent. Options include posting notices in public places, in local newspapers, through local radio and television programs or through public address system. Billboards placed in strategic locations will also serve the purpose. It is recommended to place appropriate and sufficient signages at strategic locations to forewarn the public of the expected traffic problem and to suggest alternative routes that they may take. During this period, traffic aides must be assigned to manage the traffic.

Hazards to Public Due to Construction Activities. Inconvenience to the general public which may result to accidents is one of anticipated impacts during construction activities. Pipelaying along the roads as well as movement of construction vehicles and excavations would pose some hazards to the driving public. There is also risk of people falling down in open trenches since pipelaying trenches are normally left uncovered until pipeline testing is completed.

Mitigation. PLAWD and the contractor should ensure that sufficient and appropriate safety warning devices, safety signs, safety nets or safety guards and cover for open ditches must be implemented at strategic locations to ensure the safety of the people. PLAWD may also consult the provincial and local government units to delineate the public safety zone or measurable distance prohibiting public entry and other possible forms of encroachment during construction operations. In addition, PLAWD may provide alternate access roads to further ensure public safety, if necessary.

Pollution and Health Risk due to Workers Camp. During the construction period, workers are expected to erect temporary workers' camps. Due to run-off of from sanitary sewage, wastewater and solid wastes brought by workforce, potential pollution may occur as a result of improper waste disposal.

Mitigation. The construction contractor shall prepare a solid waste disposal plan which shall be included in the CEMP. The contractor shall also be required to carry out the following: (i)

install proper sanitary facilities to prevent the indiscriminate discharge of sanitary wastes at the camps' surroundings, (ii) implement proper solid waste management, and (iii) prevent surface runoffs from flowing into the workers camps to avoid carrying away any contaminants. The contractor shall be required to use temporary diversion drains, catch drains, and silt-traps at these camps.

Improper Closure of Construction Sites. Generation of solid wastes (e.g. used wood materials, steel works cuttings, paint and solvents containers, used oil from equipment, unused aggregates, etc.) after construction activities may cause aesthetic problems and potential contamination of the surrounding environment.

Mitigation. The project site shall not be abandoned in disorderly condition but instead restored for functional use. Following the completion of the construction, the PLAWD shall deactivate the project offices, and the construction yard including unserviceable vehicles and equipment. Wastes arising from the abandonment must be taken care of the contractor.

Increase Employment Opportunities at Work Sites. Construction activities require a considerable number of workers. The impact would be beneficial and significant to people since employment opportunities in the area will increase.

Enhancement. A robust "local first" hiring policy will be designed and implemented by the contractor in coordination with local officials and community leaders especially at the barangay and municipal levels. No preference in terms of gender during the hiring process will be observed.

C. Operation Phase Environmental Impacts

Health Hazard Due to Delivery of Poor Water Quality. Delivery of water with poor quality to distribution system is a health risk to the consumers. Threats of contamination due to presence of bacteria, viruses, protozoa, or chemicals are usually present in raw water sources up to the service connections, thus, post-treatment contamination is still anticipated as the water is transported to the consumer and considered to be a significant impact.

Mitigation. PLAWD shall ensure that the potable water consistently passes the requirements of the Philippine National Standards for Drinking Water (PNSDW) of 2017. To achieve this, implementation of the water safety plan with regular water quality monitoring shall be undertaken.

A water safety plan shall enable PLAWD to (i) prevent contamination of its water sources, (ii) treat the water to reduce or remove contamination that could be present to the extent necessary to meet the water quality targets, and (iii) prevent recontamination during storage, distribution and handling of drinking water.

For controlling microbial contamination, gas chlorine disinfection will ensure that water will be chlorinated and adequate residual disinfection will be maintained. The standards for chlorine residual of the 2017 PSDW are: (i) 0.3 mg/l minimum for detection at the farthest point of the distribution system and (ii) 1.5 mg/l maximum for detection at the farthest point of the distribution system.

Pollution from Increased Generation of Sewage and Sullage. Since majority of the water supply are used for domestic purposes, increasing the water supply to the service area will also increase the generation of sewage and sullage. This wastewater will contribute to pollution of the surrounding areas if not addressed properly and impact would be significant.

Mitigation. Sewage and sullage will be discharged to the individual septic tanks system of the water consumers. The septic tank system will: (i) treat the wastewater and reduce the pollution potential and (ii) reduce the public's exposure to untreated domestic wastewater. This will help in avoiding disease transmission.

Noise and Air Pollution of Pumping Stations. Pump systems including electric motors will be housed in buildings that provide noise attenuation. The pumping station will also run on electricity to be supplied by the local power companies. Hence, no increased noise level and air pollution during operation phase. On the other hand, during occasional brownout events, a diesel-fueled electricity generator set will be used. In this case, PLAWD shall secure a Permit to Operate (PTO) from DENR to ensure compliance with the Clean Air Act. There are no anticipated operational activities that will cause dust generation. Mitigating measures are therefore not necessary for noise and air pollution.

Ground Subsidence Due to Over-pumping. The subproject does not include construction of deep well/s, therefore, over-pumping is not expected.

Pumping Stations and Water Treatment Operational Risk and Safety. The subproject does not include construction of pumping stations and water treatment facility.

Increase Employment Opportunities. Operation and maintenance activities require a considerable number of workers. The impact would be beneficial to people since employment opportunities in the area will increase. However, since the additional water supply facilities are not labor intensive, the expected number of additional workers will be small and the impact is considered less significant.

Potential Conflict on Water Uses. Water demand is expected to increase as a result of population growth which may eventually create conflict on different water uses.

Mitigation. PLAWD is expected to adopt an integrated water resources management within the watershed to improve the allocation and management of scarce water resources in the context of climate change. An agreement with DENR and the local government for the assignment of a watershed area to the WD will be worked out. The agreement will include the active participation of the municipality and watershed barangays. Meanwhile, the WD will continue to implement its tree planting program in coordination with the barangays.

After careful and thorough assessment of impacts and risk screening, this proposed subproject is expected to have an overall beneficial net effect on the water supply system of the WD because it will improve the water resiliency in the Province of Bulacan. In addition, the additional service coverage area will provide a clean water supply to more people.

Table 5-4 lists the environmental impacts and risks that requires mitigation and shall be carried to the EMP Section.

Table 5-4: Environmental Impacts and Risks for Inclusion in EMP

Environmental Impacts and Risks	Without mitigation	With Mitigation
PRE-CONSTRUCTION PHASE		
Potential nuisance and problems to the public	● -	Δ
CONSTRUCTION PHASE		
Displacement of rare or endangered species	n.a.	n.a.
Soil erosion and sediments of construction sites	● -	Δ
Nuisance/ public inconvenience in pipe laying	● -	Δ
Noise from construction equipment	● -	Δ

Environmental Impacts and Risks	Without mitigation	With Mitigation
Local air pollution due to construction activities	● -	Δ
Vehicular traffic congestion and public access	● -	Δ
Hazards to public due to construction activities	● -	Δ
Pollution and health risk due to workers camp	● -	Δ
Increase employment opportunity in work sites	● +	● +
Improper closure of construction sites	● -	Δ
OPERATION AND MAINTENANCE PHASE		
Health hazard due to delivery of poor water quality	● -	Δ
Pollution from increased generation of sewage and sullage	● -	Δ

Legend: n.a. = not applicable; Δ = insignificant; ● = significant; + = positive; - = negative

The subproject is unlikely to cause significant adverse impacts. However, there are no impacts that are significant or complex in nature, or that needs an in-depth study to assess the impact. The potential adverse impacts that are associated with design, construction, and O&M can be mitigated to acceptable levels with the recommended mitigation measures.

6 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

The public participation process included (i) identifying interested and affected parties (stakeholders); (ii) informing and providing the stakeholders with sufficient background and technical information regarding the proposed development; (iii) creating opportunities and mechanisms whereby they can participate and raise their viewpoints (issues, comments, and concerns) with regard to the proposed development; (iv) giving the stakeholders feedback on process findings and recommendations; and (v) ensuring compliance to process requirements with regards to the environmental and related legislation.

The following methodologies have been used for carrying out public consultation:

(i) Public forums through organized public consultations with residents of the barangays where the sub-project will be established.
(ii) Walk-through informal group consultations.
(iii) The environmental concerns and suggestions made by the participants were listed, and discussed, and suggestions accordingly incorporated in the EMP.

PLAWD has undertaken various activities concerning information disclosure, public consultation, and public participation for the proposed PLAWD subproject. These were done to achieve a meaningful stakeholders' consultation and ensure success. During the planning phase, information regarding the proposed sub-project was disclosed to the public.

Key informant interviews. Key informant interviews and focus group discussions (FGDs) with Sangguniang Bayan of Plaridel and PLAWD officials and staff was held on October 2019 to request for cooperation and gather information and recommendations relative to the needs of the community particularly on water supply system.

Public consultations. PLAWD conducted a public consultation/hearing on 29 November 2019 participated by a total of 105 participants/representatives from various institutions/organizations. Presentations on the proposed water supply improvement project and the proposed tariff adjustment/increase on water consumptions of the concessionaires were presented and discussed. Stakeholders/participants were encouraged and requested to raise their views on social and environmental issues to the topics presented. Stakeholders expressed their support for the PLAWD subprojects.

Participants in the public consultation/hearing conducted were asked pre-formulated questions to solicit their perception about the proposed sub-project. All the participants expressed general acceptance of the proposed water supply sub-project.

Future Consultation and Disclosure. The Initial Environment Examination (IEE) and other relevant documents will be made available at public locations in the municipality and posted on the ADB website. The consultation process will be continued during the subproject implementation to ensure stakeholders participation in project execution, as well as to implement a comprehensive information, education, and communication plan.

During detailed design, LWUA and PLAWD will again conduct public consultations and information disclosure. Large group of stakeholders are expected to attend to this proposed consultation since proposed water tariffs will also be discussed. Views of the stakeholders will be considered in the overall design process. Stakeholders' consultations shall be continued throughout the duration of the construction phase. PLAWD shall keep records of environmental and social complaints, received during consultations, field visits, informal discussions, and/or formal letters, together with the subsequent follow-up and resolutions of issues.

The summary of the activities conducted is presented in **Table 6-1** while the issues and concerns raised is summarized in

Date	Activity	Number of Attendees	Location	Topics Discussed
29 November 2019	Public Hearing	99 persons	Bulwagang Santiago Apostol, Saint James the Apostle Parish Poblacion, Plaridel, Bulacan	Proposed Plaridel Water District (PLAWD), Proposed water rates and Issues and concerns regarding the proposed project

Table *6-2*.

Table 6-1: Summary of Activities Conducted

Date	Activity	Number of Attendees	Location	Topics Discussed
29 November 2019	Public Hearing	99 persons	Bulwagang Santiago Apostol, Saint James the Apostle Parish Poblacion, Plaridel, Bulacan	Proposed Plaridel Water District (PLAWD), Proposed water rates and Issues and concerns regarding the proposed project

Table 6-2: Summary of Issues and Concerns Raised

Activity	Group Represented / Representative	Issues / Concerns Raised	Proponent's Response
Public Hearing	Ms. Efipania Perex from Brgy. Dampol	Raising of the current minimum rate of the water district to its constituents.	The increase of rate is necessary to match with the increasing prices of commodities, and to give its constituents the best service as well.
	Kagawad Reimerio Ravago and Engr. Reynante from Brgy. Parulan	Possibility of the PLAWD to be privatized and the road diggings that were still not yet repaired.	Privatization of the district is not part of the agenda of the PLAWD, and privatization only happens when the district cannot meet the concessionaires' needs. With regards to the restoration of previous works, it is included in the proposed program for the PLAWD.

Activity	Group Represented / Representative	Issues / Concerns Raised	Proponent's Response
	Antonio Manuel from Brgy. Bulihan	Possible adjustment of the implementation of the proposed increased rate on his account, considering that the last rate increase occurred in 2001, and he only connected to the water service of the district on 2017.	The proposed rate increase willapply to all the accounts, regardlessof the date they connected to theservice.
	(unnamed)	If the water meter maintenance fee of Php 20.00 will be a lifetime charge.	If the water district can absorb the fee after the water rate increase and after further study with regards to the possible malfunction of water meters every five (5) years, there is a possibility that the water maintenance fee will be removed.
	Ruben Maglingkod from La Mirada Subdivision	In accordance to existing legislation, there should be three (3) hearings to be conducted, if so, is the public hearing being conducted the final public hearing to be conducted? In addition, what is the required percentage of the population of Plaridel before a public hearing can be conducted, and is the number of attendees during the current public hearing enough?	In accordance to public hearing guidelines, the notification of concessionaires at least 15 days prior, and the posting of posters at least seven (7) days were done prior to the scheduled hearing. The majority of the population of Plaridel is not a requirement to be able to proceed with the public hearing. In addition, there are no other scheduled public hearing for PLAWD. The public hearing conducted is valid for five (5) years, and is the water rate is not approved within that duration, the conducted public hearing shall be considered expired.
		Areas where the Angat Dam supplies its water, and the possibility of the PLWD of getting its supply of water from it.	The PLAWD receives a minimum contracted volume of two (2) million liters of water daily from the Bulacan Bulk, wherein Meycauayan, Bocaue, and Marilao are connected and where they receive their daily water as well.
	Emily Mariano from Brgy. Lumangbayan	Will the increase of the water rate help in improving the dirty water received, most especially during 4:00am to 5:00am every morning?	The dirty water, including other problems such as low pressure, are caused by many factors including damaged pipelines, illegal connection, set-up of booster pumps, and the lack of check valves on water meters.
	Councilor Myra Navarro from Brgy. Sta. Ines	The possible decrease of the proposed increase rate, in order to help the poor concessionaires of the PLAWD as well as its possible privatization.	The PLAWD is a government-owned and controlled corporation. The beneficiaries of the local government unit (LGU) and the higher government agencies are the citizens and the small projects. The low-income groups are protected in the proposed increased proposed

Activity	Group Represented / Representative	Issues / Concerns Raised	Proponent's Response
			rate, as the minimum water rate should not exceed 5% of their monthly average income. Further, the privatization of the PLAWD is not part of the proposed agendas, and shall only occur it the districts ops for it or does not have the necessary funds to sustain it.
	Kagawad Reimero Ravago of Brgy. Parulan	In favor of the Php 124.00 rate increase.	

A copy of the minutes of the meeting is presented in the **Annex 6**.

7 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The EMP addresses the need for mitigation and management measures for the PLAWD subproject. This includes: (i) mitigating measures to be implemented, (ii) required monitoring associated with the mitigating measures, and (iii) implementation arrangement and reporting requirements. Institutional set-up is presented in the implementation arrangement and discusses the roles during implementation and the required monitoring. It also outlines the requirements and responsibilities during pre-construction, construction, and operation phases. The EMP shall be included in the contract documents to guarantee an environmentally responsible procurement. Tender documents and construction contracts shall include environmental management provisions on the following issues: (i) erosion and sediment runoff, (ii) noise and dust, (iii) vehicular traffic, (iv) construction wastes, (v) oil and fuel spillages, (vi) construction camps, and (vii) public safety and convenience.

A. Environmental Mitigation

Table 7-1 presents the information on: (i) required measures for each environmental impact that requires mitigation, (ii) locations where the measures apply, (iii) associated cost, and (iv) responsibility for implementing the measures. Details of mitigating measures are already discussed in **Section 5** where the need for mitigation of each impacts was determined in the screening process.

Table 7-1: Environmental Mitigation Plan

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
PRE-CONSTRUCTION PHASE					
Excavation requirements	Excavation requirements	• Provision in tender documents that will require construction activities to be stopped immediately upon discovery of any archaeological and cultural relics and promptly reporting to the National Museum	Pipeline trenches, civil works excavations	Part of detailed design cost	Design Consultants/ LWUA Project Management Unit (PMU)

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
Social and community concerns	Potential nuisance and concerns from the public	• Consultation with the affected communities regarding the expected impacts and proposed mitigation measures of the project • Provisions to address the potential nuisances and concerns from the public during construction phase must be included in the CEMP , specifically the following: (i) erosion and sediment runoff, (ii) noise and dust, (iii) vehicular traffic, (iv) construction wastes (v) oil and fuel spillages, (vi) construction camps, and (vii) public safety and convenience	Pipelines routes, ground reservoirs, and new office	Part of detailed design cost	PLAWD Project Implementation Unit (PIU), Design Consultants/ LWUA PMU
	Damage to or disruption of other utility services	• Possible utility lines that may be affected during the construction must be identified. • Proper coordination with utility providers with regard to electricity, telephone lines, and other utilities/structures that may be affected. Permit/s or clearance/s must be secured, if necessary	Pipelines routes, ground reservoirs, and new office	Part of detailed design cost	PLAWD Project Implementation Unit (PIU), Design Consultants/ LWUA PMU
Preparation of detailed engineering design	Natural hazards, such as earthquake and flood	• Structural integrity of the water supply system shall conform with the requirements of the 2015 National Structural Code of the Philippines (NSCP) and the latest edition of the American Water Works Association (AWWA) Standards for wells, pipes, valves, and fittings • Projection of flood level using 50-year return period for catchment areas less than 40 km^2, and 100-year return period for catchment areas more than 40 km^2	All structural components	Part of detailed design cost	Design Consultants/ LWUA PMU
	Project-related complaints	• Establishment of a grievance redress mechanism (GRM).			PLAWD PIU, PMU/ Supervision Consultant, LWUA

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
Site preparation	Tree cutting (if applicable)	• Assess the project area and pipe alignment and check if there are trees need to be cut. Establish ownership and avoid cutting trees of ecological importance. • Identify the number of affected trees, apply for a tree cutting permit from the DENR and comply with all government requirements.	Office building in Brgy. Bintog and Storage facility in Brgy. Rueda	Included in construction contract cost.	Contractor/ PLAWD PIU, PMU, Supervision Consultant, LWUA, DENR
CEMP preparation	Improper EMP implementation	• A contractor's environmental management plan (CEMP) shall be prepared by the contractor and cleared by PMU, PIU and ADB prior to start of construction. The CEMP will be based on the project EMP making it more site-specific and baseline information will be updated when necessary. The CEMP will identify and describe associated project facilities such as construction camp, spoils disposal areas and will include detailed management plans on traffic management, spoils and wastes management, and community and occupational health and safety.	All project sites	Included in construction contract cost.	Contractor/ PLAWD PIU, PMU, Supervision Consultant, LWUA
Baseline survey	Ambient noise level	• Baseline measurement of ambient noise shall be conducted and will be incorporated in the CEMP • If baseline noise levels already exceed the IFC-EHS guideline values, a maximum 3 dB(A) increase in noise levels as a result of project activities shall be allowed. Mitigation measures should be implemented to ensure this	Identified sites with sensitive receptors	Included in construction contract cost.	Contractor/ PLAWD PIU, PMU, Supervision Consultant, LWUA
	Non-compliance with government requirements	• All applicable government permits such as ECC/CNC, water permit, permit to operate, etc. shall be secured prior to start of construction.	All project sites	Included in construction contract cost.	Contractor PLAWD PIU/ PMU, Supervision Consultant, LWUA
CONSTRUCTION PHASE					
Pipelaying and other civil works	Soil erosion and sediments from construction	• Minimize total exposed area • Use of structural erosion prevention and sediment	Pipelines routes, ground reservoirs,	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
	sites during rainy periods	control practices which may include: interceptor dikes, pipe slope drains, straw bale barriers, sediment traps, and temporary sediment basins	and new office		
	Nuisance / inconvenience to the public	• Minimize water supply cut-off periods and /or use of nighttime schedules, as well as announcement of water supply interruptions 2-3 days prior to actual cut-off • Avoid dumping of earth, stones, and solid wastes in water bodies	Pipelines routes	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
	Nuisance from noise of construction equipment and vehicles	• All heavy equipment and machineries shall be fitted with noise dampening devices that are in good condition. • Inform workers to minimize their activities to avoid disturbing the nearby communities. Avoid operating noisy equipment during nighttime (22:00 – 06:00) • Vehicle horn signals will be kept at a low volume, if necessary.	Pipelines routes, ground reservoirs, and new office	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
	Air pollution due to construction activities	• Water spraying for dust control • Construction materials with potential for significant dust generation shall be covered • Tarpaulin cover for trucks transporting loose construction materials • Avoid smoke belching equipment	Pipelines routes, ground reservoirs, and new office	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
	Traffic congestion and hindrance to access	• Traffic diversion schemes and other traffic management plans should be properly coordinated with the LGU and the local office in charge of traffic management, and consulted with the stakeholders. • Prior to implementation of the traffic re-routing plan, the public must be informed in advance.	Pipelines routes	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
	Pollution, accident, and health risks to workers	• All domestic wastes will be disposed of in accordance with the construction and operations waste management procedures.	Workers camp; construction sites	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
		• Provision of sanitary or portable toilets to laborers • Implementing a solid waste management plan • Provision of surface runoffs control such as temporary diversion drains, catch drains, and silt-traps • Provision of personal protective equipment (PPE) to workers and requiring them to use PPE appropriate to their work • Conduct HSE training to workers, including HIV, COVID-19 and STD awareness • Implement COVID-19 guidelines and safety protocols consistent with government and WHO guidelines in work places and project areas.			
	Hazard to public due to construction activities	• Implement road safety plan and safety measures including warning signs to alert people of hazards around the construction sites, barricades, and night lamps for open trenches in pipelaying	Pipelines routes, ground reservoirs, and new office	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
	Increase employment opportunities	• A robust "local first" hiring policy will be designed and be implemented in coordination with local officials and community leaders especially at the barangay and municipal levels. • At least 50% hiring of unskilled labor from local residents will be implemented as per RA 6685. • No preference in terms of gender during the hiring process will be observed. • Adopt a just compensation scheme to avoid future labor and management conflicts.	Pipelines routes, and ground reservoirs	No cost	Contractor/ PLAWD PIU, Supervision Consultants
Rehabilitation and closure of construction sites	Improper closure of construction sites	• Removal and proper disposal of all construction wastes and implement surface restoration	Pipelines routes, ground reservoirs, and new office	Incorporated in construction contract	Contractor/ PLAWD PIU, Supervision Consultants
OPERATION PHASE					
Water production	Health hazard due to delivery	• Water disinfection using chlorine	Pipelines routes, and	Part of operation &	PLAWD / LWUA

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure or Enhancement Measure	Location	Mitigation Cost	Responsibility Implementation/ Supervision
	of poor water quality	• Water safety plan implementation • Regular water quality monitoring in compliance with the 2017 Philippine National Standards for Drinking Water (PNSDW)	ground reservoirs	maintenance costs	
Water consumption	Pollution from increased generation of sewage and sullage	• Use of individual septic tanks system of water consumers	Subproject water supply service area	Cost of water consumers	Water consumer/ LGU
Abstraction of groundwater	Scarcity of water supply and conflict in water uses	• Integrated water resources management of a watershed will be initiated by PLAWD through a MOA with DENR.	Watershed area of Bulacan province	Part of operation cost	PLAWD / LWUA

Although details of the required mitigating measures are already discussed in the screening for impacts, the following items are discussed further to highlight their importance: (i) tender documents and construction contracts; (ii) contractor's environmental management plan; (iii) water safety plan; (iv) unanticipated environmental impacts, and; (v) COVID-19 safety guidelines .

Tender Documents and Construction Contracts. Inclusion of provisions addressing the management of environmental impacts and risk during construction in contract documents in the form of a Contractor's Environmental Management Plan (CEMP) guarantees an environmentally responsible procurement. Tender documents and construction contracts shall therefore include environmental management provisions on the following issues: (i) erosion and sediment runoff, (ii) noise and dust, (iii) vehicular traffic, (iv) construction wastes, (v) oil and fuel spillages, (vi) construction camps, (vii) occupational health and safety, and (viii) public safety and convenience. The project IEE and EMP will be provided to the contractors to provide them the context of environmental management required for the project.

Contractor's EMP (CEMP). The CEMP shall be prepared by the civil works contractor prior to start of construction and needs to be approved by PLAWD's PIU. This is a refinement of the PLAWD subproject's EMP with details on staff, resources, implementation schedules, monitoring procedures and specific measures and procedures on how the contractor will implement the EMP during construction and allocate a budget. This will be the basis for monitoring the environmental performance of the contractor by the PMU, PLAWD PIU, construction supervision consultants, and other monitoring parties. Moreover, the construction supervision consultant will be able to manage the specific items expected from the contractor regarding environmental safeguards. With the CEMP, PLAWD can easily verify the associated environmental requirements each time the contractor will request approval for work schedules.

As part of the CEMP, baseline noise level measurements will be done during detailed design phase at strategic locations on the areas with sensitive receptors to establish ambient baseline noise levels.

The CEMP shall provide details on specific items related to the environmental aspects during construction. It shall include specifications on requirements for dust control, erosion and sediment control, avoidance of casual standing water, management of solid wastes, workers' camp sanitation, pollution from oil, grease, fuel spills, and other materials due to the operation of construction machineries, safety and traffic management, occupational health and safety,

avoidance of inconveniences to the public and damage to properties and, air and noise pollution control. It shall also include guidance on the proper design of the construction zone, careful management of stockpiles, vegetation, topsoil, and vehicles and machinery.

See **Annex 5** for sample CEMP outline.

Water Safety Plan. Preparation of a water safety plan is advocated by WHO for ensuring the delivery of safe drinking water to the consumers using a comprehensive risk assessment and risk management approach that covers the process of sourcing water supply up to the distribution to consumers. Similarly, PLAWD shall manage the environmental risk to its water supply system in a broader scale. A water safety plan shall enable PLAWD to (i) prevent contamination of its water sources, (ii) treat the water to reduce or remove contamination that could be present to the extent necessary to meet the water quality targets, and (iii) prevent recontamination during storage, distribution and handling of drinking water. It is an approach that will clearly show the desire of the PLAWD in applying best practices in ensuring delivery of potable water to its consumers.

Following the DOH Administrative Order No. 2014-0027 that mandates all drinking-water service providers to develop and implement their Water Safety Plan, PLAWD's Water Safety Plan is already prepared. Upon completion of PLAWD's Water Supply Improvement Project, the Water Safety Plan must be updated to include the improvements in the system.

Unanticipated Environmental Impacts. In case of occurrence of significant unanticipated environmental impacts during project implementation, PLAWD shall prepare a supplementary environmental assessment and EMP to assess the potential impacts and outline mitigation measures and resources to address those impacts.

COVID-19 Safety Guidelines. In light of the recent outbreak of COVID-19, measures to prevent the spread of the virus in the workplace shall be put in place to safeguard the health and safety of workers during the construction period. In order to adapt with the new normal, the Philippine Government has issued guidelines to mitigate the spread of the virus, but each sector is also encouraged to develop its own set of guidelines suited to the sector activities. The Department of Public Works and Highways (DPWH) has released its Construction Safety Guidelines for the Implementation of Infrastructure Projects during the COVID-19 Public Health Crisis to ensure the safety of workers under the construction sector. This may be followed for the time being since LWUA has yet to release its COVID-19 safety guidelines which the contractor must adhere to during the construction period once released. Contractors are required to adopt these guidelines in the workplace. These should be incorporated in the CEMP and resources should be allocated for its implementation. Monitoring of its implementation shall be reported in the SEMRs.

B. Environmental Monitoring

Table 7-2 presents the information on: (i) aspects or parameter to be monitored, (ii) location where monitoring is applicable, (iii) means of monitoring, (iv) frequency of monitoring, (v) responsibility of compliance monitoring, and (vi) cost of monitoring. The PMU shall prepare a semi-annual environmental monitoring reports to be submitted to LWUA management detailing the status of mitigating measures implementation.

Table 7-2: Environmental Monitoring Plan

Aspects / Parameters to be monitored	Location	Means of Monitoring	Frequency	Implementation Responsibility	Compliance Monitoring Responsibility	Monitoring Cost
PRE-CONSTRUCTION PHASE						
Specific provision in tender documents on archeological/ cultural relics	Pipeline trenches, civil works excavations	Verify draft and final documents	Twice – draft and final documents	Design consultants	LWUA PMU	Part of project management in detailed design (minimal cost)
Consultation meetings with the community	Pipelines routes, ground reservoirs, and new office	Verify meetings documentation	After completion of meetings	PLAWD, Design consultants	LWUA PMU	Part of project management in detailed design (minimal cost)
Specific provisions in tender documents on nuisance & concerns from the public	Pipelines routes, ground reservoirs, and new office	Verify draft and final documents	Twice – draft and final documents	PLAWD, Design consultants	LWUA PMU	Part of project management in detailed design (minimal cost)
Applicable government permits and clearances (ECC, others)	Entire project	Check for pemits/clearances or application status	(All government permits should be secured prior to start of construction)	PLAWD, Design Consultants, Contractor	LWUA PMU	Part of project cost
CONSTRUCTION PHASE						
Total area to be exposed; runoff flowing into disturbed sites	Pipelines routes, ground reservoirs, and new office	Visual inspection of sites; plans verification	Daily during rainy periods	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Water supply interruptions	Pipelines routes	Work schedules verification	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Materials and solid wastes dumped in water bodies	Pipelines routes	Visual inspection of sites	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Noise levels to comply with IFC-EHS noise guideline values.	Pipelines routes, ground reservoirs, and new office	Use of sound level meter	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU

Aspects / Parameters to be monitored	Location	Means of Monitoring	Frequency	Implementation Responsibility	Compliance Monitoring Responsibility	Monitoring Cost
Dust, cover of stockpiles, smoke belching vehicle and equipment	Pipelines routes, ground reservoirs, and new office	Visual inspection of sites	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Road closure and traffic rerouting; materials stockpiles; road restoration	Pipelines routes	Traffic plans verification	Weekly	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Sanitary toilets, garbage bins, runoff controls	Workers camps	Visual inspection of camps	Once before start of construction and once monthly	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
COVID-19 government protocols; symptoms on workers	All project facilities and work areas	Check for compliance with government guidelines on COVID-19	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Minimal cost to PLAWD PIU
Road safety plan; sign, barricades and night lamps	Pipelines routes, ground reservoirs, and new office	Visual inspection of sites	Daily	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Construction wastes	Pipelines routes, ground reservoirs, and new office	Visual inspection of sites	Once before final stage of demobilization	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Compliance with ECC conditions and other government requirements	Entire project	Check documents	Periodic, as needed	Contractor, PLAWD	Construction supervision consultants, PMU	Part of project cost
Number of local labor employed	Pipelines routes, ground reservoirs, and new office	Verification of contractor's records	Once a month	Contractor	PLAWD PIU	No cost
OPERATION PHASE						
E. Coli bacteria; PNSDW	Pipelines, and ground reservoirs	Water sampling and laboratory test	Monthly for bacteria; annual for	PLAWD	LWUA	Part of PLAWD's

Aspects / Parameters to be monitored	Location	Means of Monitoring	Frequency	Implementation Responsibility	Compliance Monitoring Responsibility	Monitoring Cost
physical & chemical parameters			physical & chemical			operation cost
Septic tank of water consumers	Subproject water supply service area	Visual inspection of sites	Once a year	Water consumer	LGU	Minimal cost

Project Performance Monitoring. Project performance monitoring presents the desired outcomes as measurable events by providing parameters or aspects that can be monitored and verified (**Table 7-3**). For preconstruction phase, the EMP requirements need to be incorporated in construction contracts to achieve an environmentally responsible procurement as a desired outcome. Construction phase desired outcomes include effective management of environmental impacts and reduce risk to public. For the operation phase, PLAWD's water supply system must meet the drinking water standards (2017 PNSDW) for physical, chemical, and bacteriological parameters.

Table 7-3: Project Performance Monitoring

Desired Outcomes	Aspects / Parameters to be monitored	Means of Monitoring	Frequency	Implementation	Compliance Monitoring	Monitoring Cost
PRE-CONSTRUCTION PHASE						
Environmentally responsive detailed design	EMP requirements incorporated in detailed design	Verify detailed design documents; EMP requirements reflected in tender documents	Twice – (i) draft detailed design documents and (ii) prior to approval of final documents	PLAWD, Design consultants	LWUA PMU	Minimal cost
Environmentally responsible procurement	EMP requirements incorporated in construction contracts	Verify construction contract documents	Prior to finalization of construction contract documents	PLAWD PIU	LWUA PMU	Minimal cost
CONSTRUCTION PHASE						
Effective management of environmental impacts during construction	Number of public complaints on construction activities	Verification of contractor's records; PLAWD's coordination with local officials	Once a month	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
Reduce risk to public during construction	Number of accidents involving construction activities	Verification of contractor's records; PLAWD coordination with local officials	Once a month	Contractor	Construction supervision consultants, PLAWD PIU	Part of consultant's construction supervision contract; minimal cost to PLAWD PIU
OPERATION PHASE						
Conformance of Water quality to drinking water standards	Required drinking water quality parameters (bacteria count, color,	Water sampling and laboratory test	Monthly for bacteria; annual for physical & chemical	PLAWD	LWUA	Part of PLAWD's operation cost

Desired Outcomes	Aspects / Parameters to be monitored	Means of Monitoring	Frequency	Implementation	Compliance Monitoring	Monitoring Cost
	pH, turbidity, dissolved solids, hardness, alkalinity, manganese, iron, fluoride, chloride, sulfates, magnesium, calcium, carbonates, and bicarbonates)					

C. Implementation Arrangement

This subsection presents the: (i) institutional set-up, (ii) implementation schedule, (iii) required clearances and permits, and (iv) capability building

Institutional Setup. For this subproject, LWUA will serve as the executing agency, while PLAWD will be the implementing agency. LWUA has overall responsibility for project coordination, implementation, and liaison with ADB and other government offices. A Project Management Unit (PMU) to be created by LWUA will be responsible for coordinating the implementation at the national level. PMU shall be established by LWUA prior to the start of construction activities. A PMU staff shall be designated as the Environment Officer for the project. Before the commencement of the subproject, a team of consultants will assist LWUA's PMU and PLAWD to ensure smooth implementation and secure required documents. PLAWD will be responsible for the procurement of goods, works, and services. During construction and operation phase of the subproject, PLAWD will oversee the implementation of the subproject. PLAWD shall create a Project Implementation Unit (PIU) for the day-to-day management of the project and will work closely with LWUA's PMU. WDGRC will handle the grievance redress mechanism and promptly address the public's complaints about environmental performance of the subproject.

ADB will assess status of EMP implementation and over-all environmental performance of the Project by reviewing environmental monitoring reports submitted by LWUA and conducting site visits to validate conditions onsite. Corrective actions will be agreed with LWUA, PLAWD and the contractor to address deficiencies in EMP implementation or inadequacy of mitigation measures. ADB will disclose on its web site semi-annual environmental monitoring reports submitted by LWUA.

Environmental Corrective Action Plan. Should the mitigation measures indicated in the CEMP and EMP are observed to be inadequate during subproject implementation, the construction supervision consultants and PIU shall propose a corrective action plan to address this inadequacy and ensure compliance.

Environmental Monitoring Reports. During the construction period, the contractor shall prepare a monthly environmental self-monitoring report to be submitted to PIU, construction supervision consultants, and PMU. The PIU together with the construction supervision consultants, shall also conduct at least monthly site inspection to monitor EMP implementation and validate the contractor's environmental monitoring reports. Monthly reports of these monitoring activities shall be submitted to PLAWD and the PMU. The PMU shall collate all the monthly data and prepare semi-annual environmental monitoring reports (SEMR) which shall be submitted by LWUA to ADB. SEMRs are due on 31 July for the first semestral report and

on 31 January of the following year for the second semestral report. ADB will publicly disclose the SEMRs on its web site.

Implementation Schedule. The PLAWD subproject was scheduled to start in the fourth quarter of 2019 and to be completed by the end of 2021. PLAWD shall ensure that construction contract provisions related to the EMP shall be included in the tendering stage.

Item No.	DESCRIPTION	Year 2019				Year 2020				Year 2021			
		1	2	3	4	1	2	3	4	1	2	3	4
1	Detailed Design and Tendering												
2	Lot Acquisition												
3	Laying of Transmission/Distribution Lines, installation of Valves and Hydrants												
4	Bridge/River/Culvert Crossings												
5	Pavement Cutting, Breaking and Restoration												
6	Purchase of Generator Set												
7	Construction of Reservoir/Storage Facilities												
8	Construction of New Office Building/Warehouse/Motorpool												
9	Installation of Service Connections												
10	Purchase of Vehicles/Equipment												

Clearances and Permits. Under Philippine regulations, PLAWD shall apply for an Environmental Compliance Certificate (ECC) from the EMB Region III for the proposed augmentation of the existing water supply system. Securing the ECC from EMB Region III will cost PhP 5,055.00. The ECC shall be secured prior to implementation of the subproject. Tree cutting permits will be secured from EMB Region III by the contractor, if trees have to be cut.

Capability Building. Capacity building activities for LWUA, the project management unit (PMU) and PLAWD on ADB processes such as environmental and social safeguards, gender mainstreaming, procurement, disbursement and financial management will be provided under the WDDSP. Other trainings necessary for an efficient implementation of the subproject will be identified and added in the future.

Environmental Cost. The indicative overall cost for the implementation of the EMP is shown in **Table 7-4**.

Table 7-4: Cost for EMP Implementation

Component	Description	Number/ Frequency	Cost per Unit (PhP)	Cost (PhP)	Source of Funds
PRE-CONSTRUCTION PHASE					
Clearances and permits	Securing ECC from EMB-RO	1 ECC	5,055/ ECC	5,055 for ECC	PLAWD expense
Public consultations and information disclosure	Information disclosure and consultations during preconstruction and construction phase, including public awareness campaign through media	As per requirement	Lump sum	52,000	PLAWD expense
Capacity building	(i) Orientation workshop PLAWD officials and staff involved in the	One	Lump sum	720,000 for the 12 WDs included under the WDDSP	Part of the loan package

Component	Description	Number/ Frequency	Cost per Unit (PhP)	Cost (PhP)	Source of Funds
	project implementation on ADB SPS (2009), applicable laws, rules and regulations on environment;				
Baseline ambient noise level survey (24 hr)	Assessment of air quality and noise level along receptors	To be determined	Contractor's liability (approx. 4,000/ sampling station excluding mobilization and manpower cost)	Depends on the number of designated sampling stations	Covered under construction contract (CEMP)
CONSTRUCTION PHASE					
Noise and dust suppression at work sites	Application of noise and dust suppression measures	As required	Contractor's liability	Not applicable	Covered under construction contract
Traffic management	Safety signboards, temporary diversions, barricades, etc.	Wherever required throughout the project corridor	Contractor's liability	Not applicable	Covered under construction contract
Noise level monitoring	Compliance with the IFC-EHS Guidelines	Everyday along nearest receptors	Contractor's liability	Not applicable	Covered under construction contract
Hazard to workers	Implementation of occupational health and safety measures	Throughout the construction period	Contractor's liability	300,000 annually	Covered under construction contract
Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising and defect liability period	Lump sum	Contractor's liability	As per insurance requirement	Covered under construction cost – contractor's insurance
OPERATION PHASE					
Water quality	Monthly sampling of water going into the transmission line and randomly from a tap source	8 pumping stations and 1 reservoir	2,400/set of samples monthly (microbiological) and 25,600/set of samples yearly (physical-chemical)	Php 54,400 annually	PLAWD operating expense

8 GRIEVANCE REDRESS MECHANISM

Following discussions during the DDR mission, it was agreed to integrate the ADB required GRM into the current consumer feedback measures that are already implemented and are well established. This GRM provides a mechanism to cater both environmental and consumer related issues to record along with water supply, billing, and environmental complaints. The system however maybe adjusted or modified according to the need specific to the area of implementation considering its geographical and cultural setting as resolved by its Barangay Council.

To protect also the indirect households, the project will integrate required GRM to include non-water district customer's feedback measures during Construction and Project Implementation affecting the environment.

The PLAWD management team were aware of the need to be able to respond to issues in a timely manner and will separate project related grievances from ongoing supply issues for reporting to ADB and LWUA. In addition, it is also the responsibility of PLAWD management team to respond to non-consumer entities against the Contractor with regards to project related grievances from ongoing environmental issues for reporting to DENR, LWUA and ADB. Contact information of the GRM will also be included in project information billboards or booklets, if these are required for the project.

A member of the PLAWD as well as from the Contractor's side will be appointed to be the focal team for GRM management will liaise to inform the Contractor, DENR, and Barangay administration of procedures in case of any issues. All complaints whether received verbally or in writing will be properly documented.

The Project's grievance redress mechanism shall in no way impede access to the formal legal system or the courts. The decision of the courts is for finality of case resolution. Below are the steps to be followed in filing grievances and the procedures for redress.

Step 1: The complainant provides the background and files the grievance/complaint verbally or in writing to the PLAWD. If unwritten, the Secretary in the PLAWD Office will record it in the PLAWD complaints system noting it as a project grievance. The focal point for PLAWD will respond to the complainant within 3 days to assess whether the issue is project related and environmental issue and aim to resolve the issue and record it within the project grievance register.

Step 2: If no resolution or understanding is reached, the complainant files the grievance/complaint to the PMU within LWUA for it to be resolved within 15 days after filing. The written complaint shall be reproduced in four (4) copies; the original to Executing Agency – Project Management Unit (EA-PMU), two (2) for Water District – Project Implementation Unit (WD-PIU), and one for the file of the complainant.

Step 3a: The Lupon ng Kapayapaan ng barangay (justice system members) whenever possible to resolve the issue at the barangay level. The barangay process may take 15 days or more, including submission of complaint, recording, hearing and resolution.

Step 3b (for environment related issues): The Barangay Committee on Environment, whenever possible, to resolve the issue at the barangay level. The barangay process may take 15 days or more, including submission of complaint, recording, hearing and resolution.

Step 4: For environmental related issues, if no resolution or understanding is reached and if the grievance/complaint qualifies for submission to DENR's Pollution and Adjudication Board for Assessment at DENR's Regional Office.

Step 5: Again, if no resolution or understanding is reached and if the grievance/complaint qualifies for hearing at the Municipal Trial Court (MTC) or Regional Trial Court (RTC), the complainant may request for assistance of the *pro bono* lawyer from the Public Attorney's office, through the Water District Grievance Redress Committee (WDGRC). The *pro bono* lawyer shall assist the complainant in reproducing the formal complaint in five (5) copies to be distributed as follows: the original to the appropriate court, one each for PMU, PIU, WDGRC and for the file of the complainant.

Step 6: The MTC or RTC assesses the merit of the grievance/complaint, schedules the hearing and renders a decision. Appeals can be elevated to the high court. The Supreme Court's decision is final and executory.

Aggrieved parties may also inform the Office of Special Project Facilitators (OSPF) of the ADB of any project-related grievances. APs will be exempted from all administrative and legal fees.

Unresolved grievance can be elevated to the proper courts. The PLAWD will maintain a full record of all complaints and grievances received, and the actions taken. PLAWD will also ensure grievances are recorded and reported in the Integrated Environmental and Social Safeguards reports that are submitted to ADB every six (6) months during project implementation.

Costs. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by PLAWD.

Complaints to the Department of Environment and Natural Resources. Complaints about environmental performance of projects issued an Environmental Certificate of Compliance (ECC) can also be brought to the attention of DENR-EMB. The process of handling such complaints is described in the Revised Procedural Manual (2007) for the IRR of PD 1586. The steps that DENR-EMB may follow in handling complaints are: (i) DENR-EMB shall verify if the complaint is actionable under PD.1586, (ii) within 72 hours from receipt of a complaint DENR-EMB will send the proponent a Notice of Alleged Violation (NAV) and requests for an official reply as to why the proponent should not be penalized, (iii) DENR-EMB may conduct field validation, site inspection and verification or other activities to assess or validate the complaint. The proponent is required to respond within seven (7) days. Proponent's failure to respond to the NAV and further notices will force DENR-EMB to take legal actions. DENR may issue a Cease and Desist Order (CDO) to project proponents which shall be effective immediately based on: (i) violations under the PEISS, and (ii) situations that present grave or irreparable damage to the environment. PD 1586 also allows DENR to suspend or cancel the proponent's ECC if the terms and conditions have been violated.

9 CONCLUSION AND RECOMMENDATIONS

PLAWD's water supply subproject will benefit the general public by contributing to the long-term improvement in the water supply system of the project coverage area and providing safe drinking water to residents and commercial establishments in the municipality. The potential adverse environmental impacts are primarily associated with the construction period, which can be minimized through mitigating measures and environmentally sound engineering and

construction practices.

Under the Philippine law, since the subproject is categorized under Category B, securing of ECC may be carried out through online application (which may still be subject to the EMB reginal office). It is also environment category B under ADB SPS requiring the preparation of this IEE Report. Acquisition of ECC for PLAWD Water Supply Improvement Project shall be carried out by the Contractor. Construction will not be started until the ECC has been obtained.

With the implementation of the mitigation measures as proposed in the EMP, the subproject is not expected to cause irreversible adverse environment impacts. Also, the water supply subproject can be implemented in an environmentally acceptable manner without the need for further environmental assessment study, except for the conduct of a public consultations for compliance and further input. Should there be any significant change in the project scope, an updated or a new IEE will be prepared.

The proposed PLAWD subproject is hereby recommended for implementation with the following requirements to be strictly followed: (i) Tendering process shall ensure environmentally responsible procurement by requiring the inclusion of EMP provisions in the bidding and construction contract documents; (ii) Contractor's submittal of a CEMP which shall be included in the construction contract; (iii) Contract provisions on creation and operation of the WDGRC shall be included in construction contracts; (iv) LWUA, with its regulatory function, shall ensure that capability building for PLAWD shall be pursued; and (v) PLAWD shall continue the process of public consultation and information disclosure during detailed design and construction phases.

The IEE and EMP will be updated or a new IEE and EMP will be prepared, should there be significant changes in the project design or the scope of work. The updated or newly prepared documents will be submitted to ADB for review, clearance and public disclosure.

10 REFERENCES

Asian Development Bank. (2014). *Philippines: Water District Development Sector Project*. Local Water Utilities Administration, of the Asian Development Bank.

Department of Environment and Natural Resources-Biodiversity Management Bureau, Conservation International Philippines (CI Philippines), and the Haribon Foundation. (2006). Priority Sites for Conservation in the Philippines: Key Biodiversity Areas.

Japan International Cooperation Agency & Department of Public Works and Highways – Unified Project Management Office. (2017). *Environmental Impact Assessment for Plaridel Bypass Road Project: Supplemental Report (Updates)*. Port Area, Manila.

Municipality of Plaridel. (n.d.). *Comprehensive Land Use Plan of Plaridel.* Municipality of Plaridel, Bulacan.

Philippine Atmospheric, Geophysical and Astronomical Services Administration. (2011). *Climate Change in the Philippines.* Retrieved from https://dilg.gov.ph/PDF_File/reports_resources/DILG-Resources-2012130-2ef223f591.pdf on 02 Sep 19.

Province of Bulacan. (2014). *Bulacan Provincial Development and Physical Framework Plan*. Provincial Planning Office, Bulacan.

United Nations. (n.d.). *Sustainable Development Goals*. United Nations Development Programme.

ANNEX 1
ACCOMPLISHED REA

WATER SUPPLY
Page 1 of 4

Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES) for endorsement by the Director, SDES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: Water District Development Sector Project
Plaridel Water Supply System Improvement/ Expansion Project

Sector Division:

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area…			
▪ Densely populated?		✓	
▪ Heavy with development activities?		✓	
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site		✓	
• Protected Area		✓	
• Wetland		✓	
• Mangrove		✓	
• Estuarine		✓	
• Buffer zone of protected area		✓	
• Special area for protecting biodiversity		✓	
• Bay		✓	
B. Potential Environmental Impacts Will the Project cause…			

WATER SUPPLY
Page 2 of 4

Screening Questions	Yes	No	Remarks
▪ pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?		✓	
▪ impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	
▪ hazard of land subsidence caused by excessive ground water pumping?		✓	
▪ social conflicts arising from displacement of communities ?		✓	
▪ conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?		✓	
▪ unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	✓		Regulated water quality monitoring
▪ delivery of unsafe water to distribution system?	✓		Regulated water quality monitoring
▪ inadequate protection of intake works or wells, leading to pollution of water supply?		✓	
▪ over pumping of ground water, leading to salinization and ground subsidence?		✓	
▪ excessive algal growth in storage reservoir?	✓		Regular cleaning of storage reservoir
▪ increase in production of sewage beyond capabilities of community facilities?		✓	
▪ inadequate disposal of sludge from water treatment plants?		✓	
▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?		✓	
▪ impairments associated with transmission lines and access roads?	✓		Proper coordination with utility providers and LGUs
▪ health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.		✓	
▪ health and safety hazards to workers from handling and management of chlorine used for disinfection, other contaminants, and biological and physical hazards during project construction and operation?	✓		Use of PPEs
▪ dislocation or involuntary resettlement of people?		✓	
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	
▪ noise and dust from construction activities?	✓		Noise and dust suppression measures like water sprinkling and use of mufflers

WATER SUPPLY
Page 3 of 4

Screening Questions	Yes	No	Remarks
▪ increased road traffic due to interference of construction activities?	✓		Traffic management plan
▪ continuing soil erosion/silt runoff from construction operations?	✓		Sediment and soil erosion measures
▪ delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?	✓		Proper operation & maintenance in compliance to water safety plan
▪ delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?	✓		Proper operation & maintenance in compliance to water safety plan
▪ accidental leakage of chlorine gas?		✓	
▪ excessive abstraction of water affecting downstream water users?		✓	
▪ competing uses of water?		✓	
▪ increased sewage flow due to increased water supply	✓		Septage and Sewerage Management Program
▪ increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant		✓	
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?	✓		Prioritize local hiring
▪ social conflicts if workers from other regions or countries are hired?		✓	
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?	✓		Dissemination of awareness regarding construction activities
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	✓		Dissemination of awareness regarding construction activities

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: LOAN 3389/GRANT 0477-PHI:
WATER DISTRICT DEVELOPMENT SECTOR PROJECT (WDDSP)
Plaridel Water Supply System Improvement/ Expansion Project
Sector:
Subsector:
Division/Department:

Screening Questions		Score	Remarks[1]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): **LOW**
Other Comments: _____

Prepared by: (SGD) ENGR. CHARLIE FELICITAS
Designation/Agency: SENIOR ENGINEER / PLARIDEL WATER DISTRICT
Date: 11/28/2019

[1] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

ANNEX 2
LOCATION OF THE SUBPROJECT SITE

1.) BINTOG PUMP STATION (Proposed Location of PLAWD Office Building)

LOT 3074A AREA = 1000 SQ. M
LOT 1 = 86 SQ.M.
LOT 2 = 54 SQ.M.
LOT 3 = 50 SQ.M.

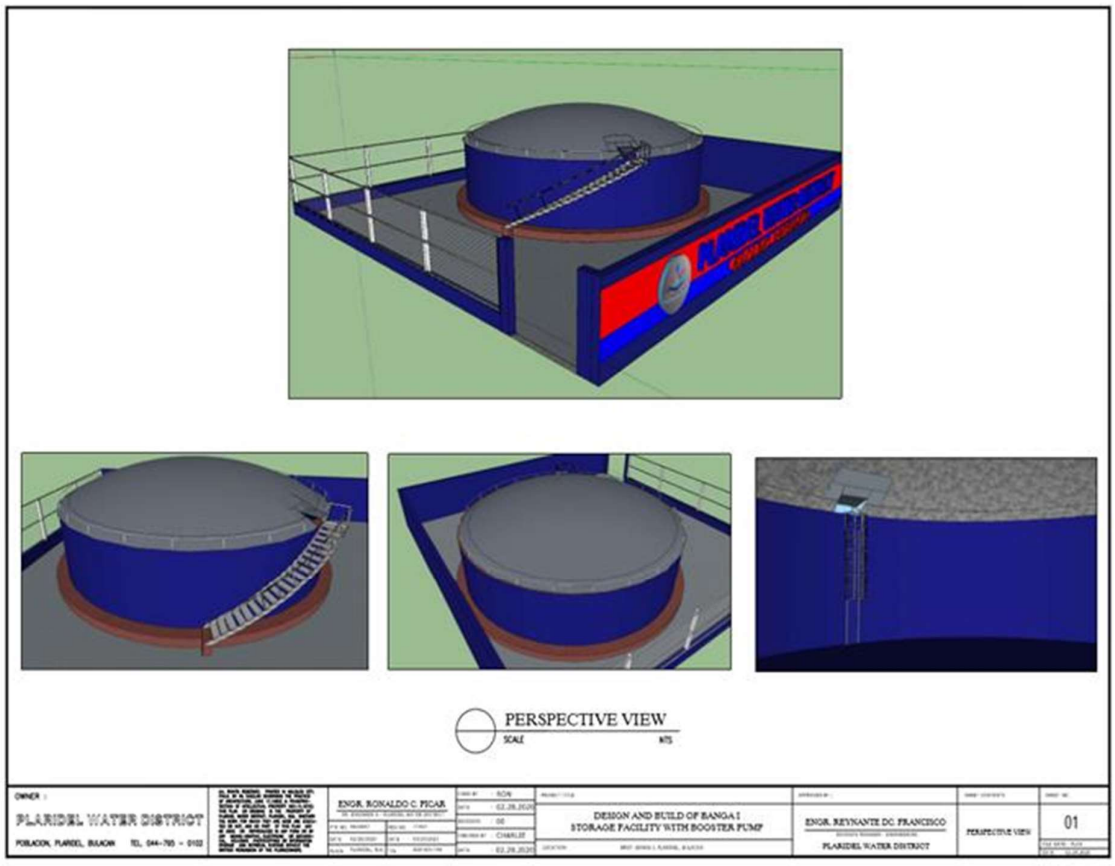
2.) RUEDA PUMP STATION (Proposed Ground Reservoir)
LOT AREA = 500 SQ. M
BASED ON ACTUAL MEASUREMENT OF RUEDA

3.) BANGA 1ST RESERVOIR (Proposed Ground Reservoir)

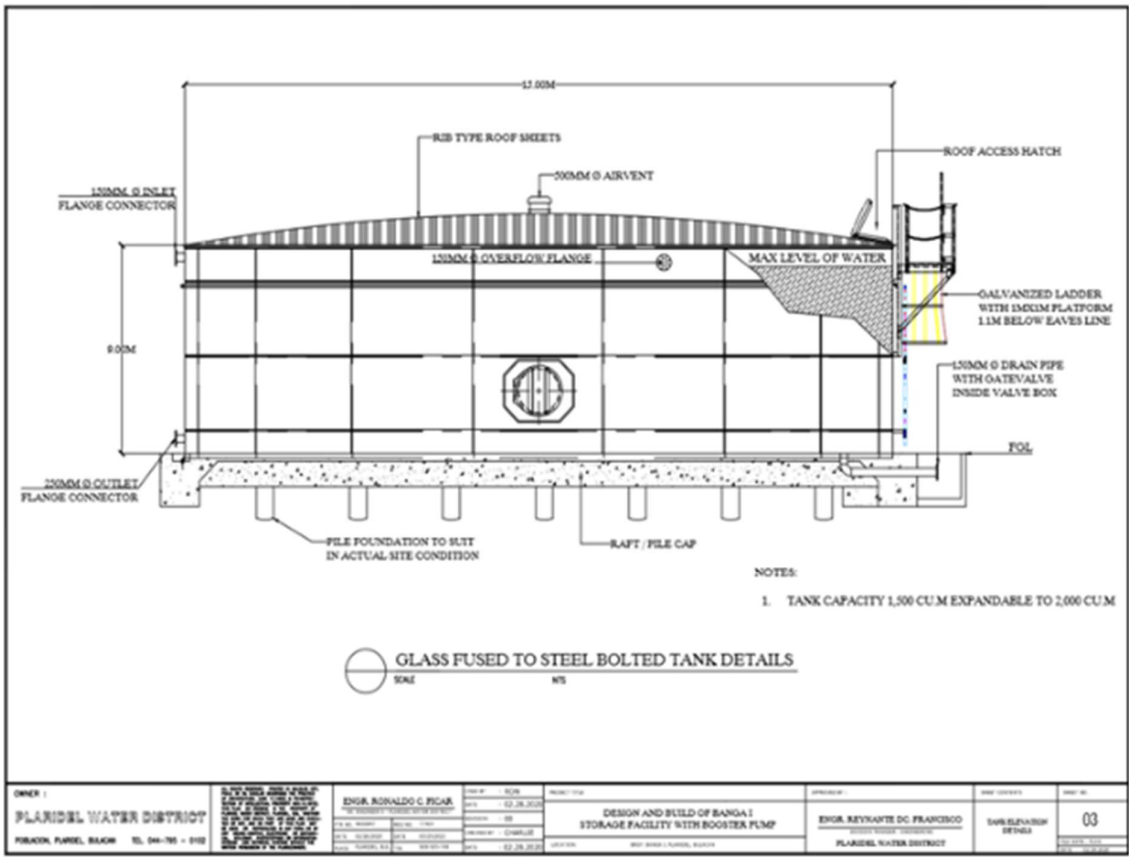
LOT AREA = 500 SQ. M

ANNEX 3
PLAWD STORAGE FACILITY DESIGN

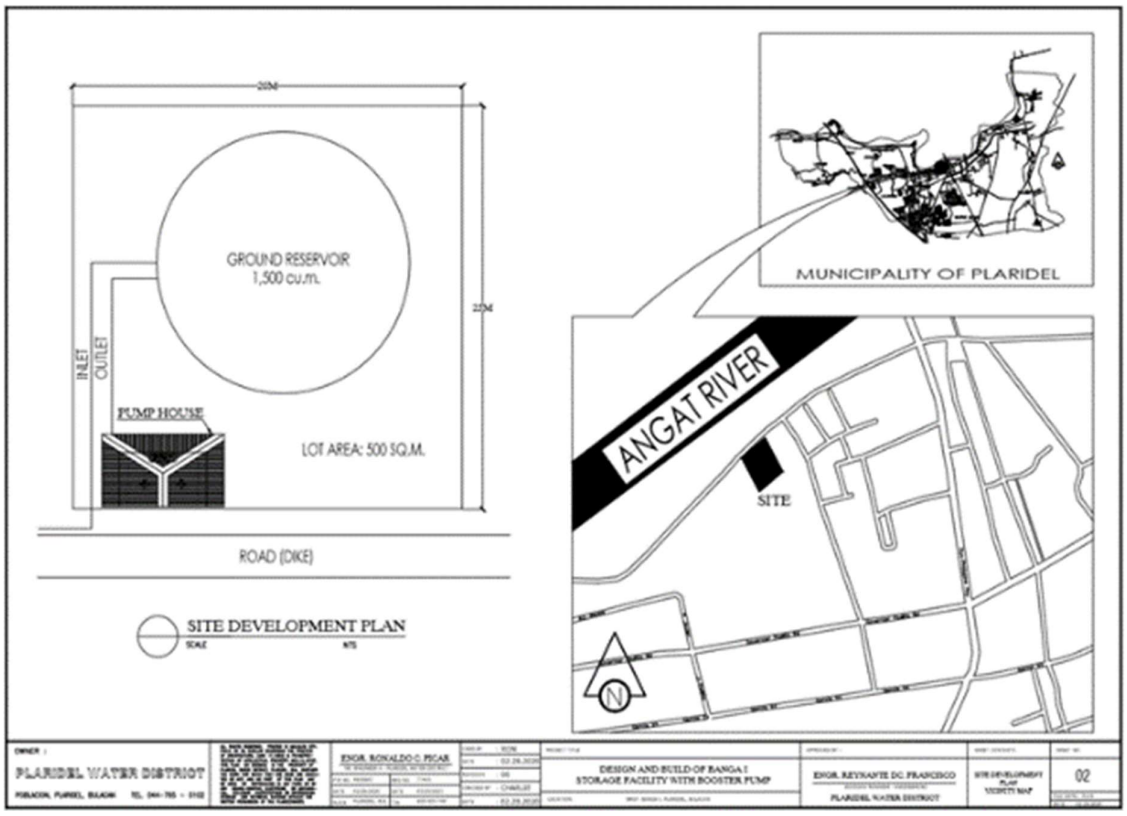
1.) Reservoir Perspective View



2.) Tank Details



3.) Site Development Plan



ANNEX 4
SAMPLE GRIEVANCE REDRESS FORM

The_____Project welcomes complaints, suggestions, queries, and comments regarding projectimplementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date		**Place of Registration**			
Contact Information/Personal Details					
Name		**Gender**	* Male * Female	**Age**	
Home Address					
Place					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of Official registering grievance)	
Mode of communication: Note/Lett er E-mail Verbal/Telephonic	
Reviewed by: (Names/Positions of Officials Reviewing Grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

ANNEX 5
SAMPLE CONTRACTOR'S ENVIRONMENTAL MONITORING PLAN (CEMP) OUTLINE

I. **Brief Project and Contract Package/Lot Description**
Note: include construction activities and map/s

II. **Brief Description and Purpose of Contractor's Environmental Management Plan (CEMP)**
Note: include applicable laws

III. **Associated Project/Lot Facilities and Sensitive Receptors** – description and location
Note: include photos
a) Construction and Workers' Camps
b) Material Sources and Storage Areas – quarries, borrow pits, water
c) Workshop and Fabrication Yards
d) Hazardous Materials and Chemical Storage Areas – fuel, oil, bitumen, chemical additives
e) Wastes and Spoils Disposal Areas – construction wastes, domestic wastes, hazardous waste
f) Crushing and Batching Plants – asphalt and concrete
g) Bridges and Bypass Roads
h) Sensitive Receptors – schools, hospitals, religious institutions

IV. **Construction Impacts and Mitigation Measures; Institutional Arrangements and Timing for EMP Implementation** – refer to the EMP table in the IEE and contract documents as basis and indicate the mitigation measures that will be implemented for the contract package for the following):
a) Soils and Material – topsoil, soil erosion, reclaimed pavement and spoils, slope stability
b) Quarry and Borrow Sites – degradation of borrow sites
c) Water Resources – operation of quarries on river banks, siltation, spills from asphalt plants/trucks, bridge activities
d) Air, Noise and Vibration – emissions, dust, noise from construction vehicles and equipment, crushing, asphalt and cement mixing plants, construction activities
e) Waste and Hazardous Materials – solid wastes, hazardous and chemical wastes, sewage
f) Flora and Fauna
g) Construction Camps, Storage Depots
h) Local Roads – traffic management, access, congestion, road safety
i) Community – safety, disruption, access
j) Workers' Safety, Health and Sanitation – includes HIV/AIDS STD

V. **Environmental Baseline Measurements and Sampling** – location of sampling sites, methodology, results (if not available yet, to be included in first SEMR for the lot)
Note: include photos

VI. **Environmental Monitoring Program (EMoP)** – schedule of inspection, parameters to be checked and methodology, checklist for EMP Compliance Monitoring, inspection monitoring form

VII. **Public Consultation, if necessary; Training**

VIII. **Grievance Redress Mechanism (GRM) (See Annex 4)** – detailed procedure for resolving complaints

IX. **Annexes**
a) copies of all relevant permits (batching plants, disposal sites, tree-cutting, quarries, ECCs, etc.)
b) baseline sampling laboratory results (original copies)

Note: The CEMP should be straightforward and concise. It need not be a lengthy document.

ANNEX 6
PUBLIC CONSULTATION PROCEEDINGS

1.) Attendance Sheets

Form no: QMS F1
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE OF PLAWD EMPLOYEES

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29, 2019 / 10:00AM**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Signature
1	Maybel M. Cruz	
2	ROBERT M. BUENAVENTURA	
3	MARC JOHN REGIE GALICIA	
4	Harold T. Fabian	
5	Emil C. Teodoro	
6	ARNEL B. SANTOS	
7	Alvin Guevarra	
8	DENNIS D. VANTOY	
9	Manuel Boy R. Tengco	
10	Rosario Clowel	
11	BRYAN L. SERRANO	
12	Paul R. Vinluan	
13	Lorraine R. Juguilon	
14	Krizanne T. Mauricio	
15	Jujit S. Pagulayan	
16	Lizandro Santos	
17	RONALDO N. DULAON	
18	Sonny CAPARAS	
19	MANUTAOR U. ENCARNADO	
20	Ron Rivero	

Form no: QMS-02
March 2017
Rev. 01

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Date/Time: **November 29, 2019 / 10:00AM**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Signature
21	EDGARDO N. DE LEON	
22	JOSELITO S. SAMSON	
23	Elias G. Vinta	
24	RICHARD B. CATUIZA	
25	WARREN MENDOZA	
26	Naimee E. Cruz	
27	C. PASAGUI	
28	ESMENALDO L. VILORIA	
29	REGIE FRANCISCO	
30	[illegible]	
31	B. Gata	
32	A. [illegible]	
33	Arturo Arroyo	
34	Nancy [illegible]	
35		
36		
37		
38		
39		
40		

Annex 6

Form no.: QMS 02
March 2017
Rev. 03

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
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Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	ANTONIO MANUEL	0767 [illegible]	0961 894 950	
2	LUIS S. SERAFICO	LWUA	09179[illegible]	
3	SANTY Q. BERMUDA	CONCEPCION W.D	0917 143 [illegible]	
4	GLORIA S. DUNGO	—do—		
5	Rosalina M. Laranilo	0759 Bintog Pla. Bul.	09194090715	
6	Maria Grace Agustin	600 Purok 6 Dampol Pla.	09173435489	
7	Ma. D. Evangelista	Bintog Plaridel, Bul		
8	manuel G Yumol	[illegible] Bul		
9	Rosalina T. Malabarbas	0266 Lumang Bayan		
10	ACELA LAVIÑA	PH 2 BLK 14A LOT 7 [illegible] LUMINA PLARIDEL	09167481153	
11	Danilo Jr. R. Gatuz	Tabang, Plaridel	0909 8724686	
12	Ronnie B. Largado	Calumpit, Bulacan	09253011364	
13	Glen G. Bernardo	San Jose Plaridel Bul.		
14	Christy Baldonado	Bustos WD		
15	Jefferson Garcia	Tabang Plaridel	0923-926-9469	
16	Cielo Marie T. Mauricio	Bintog, Plaridel, Bulacan		
17	Jerick Marcelo	Banga 2nd Pla. Bul	09166843759	
18	[illegible] A. Agustin	Concepcion Pla. Bulacan	09269148575	
19	Nenita G. [illegible]	sto niño	0918 5299357	
20	Susan Prado	sto niño		

Annex 6

Form no: QMS 02
March 2017
Rev. 01

PLWD PLARIDEL WATER DISTRICT

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Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Dolores D. Angeles	CALANGAN	09982929280	[illegible]
2	Emely M Marquez	Lumangbayan	09755922308	[illegible]
3	Florentina S. Collgado	Concepcion Tarlac	065-923 N96	[illegible]
4	Carmelita A Tavarez	Looban Tabang		[illegible]
5	Lhody Lopera	poblacion	0916450480	[illegible]
6	HILDA A. MARCELO	POBLACION	09164195049	H Marcelo
7	Ronil Mangahas	Banga 1st		[illegible]
8	Jenny Mangay	L. Bayan	0995 4341 [illegible]	[illegible]
9	IBARRA P. VILLAFUERTE	STO. NINO	0935861967	[illegible]
10	EDGARDO VALENCIA	MA. LOURDES	09322101719	[illegible]
11	LINA M. LEONZON	Poblacion	794-0414	[illegible]
12	Kevin Lorenz Jimenez	Pulilan	09050436344	[illegible]
13	Phil EUSEBIO	SIPAT	09974416035	[illegible]
14	Paolo Buenaventura	Lumang bayan	0905-862-7021	[illegible]
15	SEGUNDO ANGELES	BANGA 2ND	09975809266	[illegible]
16	CONRADO DE GUZMAN	POBLACION	0922-4199095	[illegible]
17	Concepcion D. Ong	Banga I		CDOng
18	Antonia C. Gatuz	Tabang		[illegible]
19	[illegible] C. [illegible]	Lumang Bayan	09959609980	[illegible]
20	Hilario Ribuyaco	Rocka Village	09753783386	[illegible]

Annex 6

Form no: QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

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ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Kgwd. Relmerio Ravago	Parulan	0998 2472561	[signature]
2	Ana Lanzano	771 Banga Igl pla.		[signature]
3	Fortunato Silverio	166 SIPAT	0932-6210	[signature]
4	EDUARDO C. YUSI	CON. TABLAC		[signature]
5	BERNIE PAMINTUAN	CON.		[signature]
6	Rosalie R. Camije	Bintog	09171592806	[signature]
7	SALVADOR BUAN	PARULAN	09993609971	[signature]
8	Ma. Maricel T. Mauro	Bintog	09278386236	[signature]
9	Jose R. Lopez	Sn Jose	[illegible]	[signature]
10	Ricardo B. Felipe	Rocka Complex	[illegible]	[signature]
11	HENRY B PINGOL	6337 ROSAT ROCKA CON	[illegible]	[signature]
12	Epifania Perez	Dampol, Plaridel, Bulacan	09563809825	[signature]
13	JOHN PAUL CONCEPCION	Rueda, PLARIDEL, Bulacan	09361779061	[signature]
14	Jonaly n M. Lunzaga	0266 Lumang Bayan		[signature]
15	CORAZON S CUEVO	Lumangbayan	0923 743 1155	[signature]
16	ORLANDO F CANDIDA	BANGA 2ND		[signature]
17	Maria Concepcion C Gafia	Tabang, Plaridel	09232824030	[signature]
18	BRIAN GALANG	DOÑA CRISPINA	09991785993	[signature]
19	NESTOR C-CRUZ	BUSTOS WD	[illegible]	[signature]
20	JOYCE CASIS	LAGUNDI PLA. BUL	0926 [illegible]	[signature]

Annex 6

Form no. QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	CELSO B. BONIFACIO	TABANG, PLARIDEL		[illegible]
2	JAYPEE MANUEL	AGNAYA, PLA. BUL		[illegible]
3	Concepcion Cabuay	Casa Vista		[illegible]
4	Marita L. Torillo	Rinfog, Plaridel Bul	09222558199	[illegible]
5	Arnold S. Ramonia	San Jose Pla, Bul		[illegible]
6	Maria Emma Camacan	Northville Tabang Plaridel		[illegible]
7	ORLANDO V. FORREN	TABANG		[illegible]
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Form no: QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
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ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Segundina De Guzman	Sipat III Pla Bul	09120107614	
2	Lolita de Jesus	Lumang Bayan	09519855798	
3	ROY KIM GARCIA	BARANGAY 2ND POBLACION		
4	MYRA R. NAVARRO	STA. INES -	09239122529	
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2.) Minutes of the Meeting

Friday, 29th November 2019, 10:00 am
Bulwagang Santiago Apostol, Saint James the Apostle Parish
Poblacion, Plaridel, Bulacan

I. Present

Ms. Nancy C. Dela Cruz, Chairperson of the Board of Directors
Ms. Amira Arroyo, Board Member
Engr. Bede Gata, 6th Member of the Board of Directors
Engr. Esmeraldo L. Viloria, Interim General Manager
PLAWD Officers & Staff Members
Ms. Gigi Serafica, LWUA Representative
Observers from Calumpit, Bustos and Concepcion Water Districts
Concessionaires (see attached files)

II. Registration

The Public Hearing was called to order at 10:15 am.

III. Opening Prayer

Mr. Sonny Caparas of the Admin and Finance Division led the opening prayer.

IV. Pambansang Awit

Singing of the National Anthem with the aid of Audio media.

V. Welcome Remarks

Chairperson Nancy C. Dela Cruz opened the event with a welcoming remark. Chairperson Dela Cruz acknowledged the presence of our concessionaires, LWUA representative, the Board of Directors, and representatives from other WDs.

VI. Overview of the Water District

IGM Esmeraldo L. Viloria presented a powerpoint of an overview of the Plaridel Water District (PLAWD).

Page 1 of 8

VII. Presentation of Proposed LWUA-ADB Project

Manager Reynante Francisco of the Engineering Division presented a powerpoint of the proposed LWUA-ADB Project.

The presentation covered the following topics:

1. Common complaints to PLAWD and its causes
2. Major issues and concerns faced by PLAWD
3. Existing and proposed actions
4. Overview of the LWUA-ADB Project
    - The Project aims to provide major rehabilitation and improvement to PLAWD's water supply system
    - The loanable amount is Php301,495,284.00, payable for 18 years at 4% per annum
    - 4 production wells, treatment facilities, power back-up system
    - 2 water storage facilities with booster pumps
    - 28 km transmission and distribution pipelines
    - Lots acquisition, PLAWD office building, warehouse, motor pool, and service vehicles
5. Breakdown Cost of the Project
6. Other essential projects and programs

VIII. Proposed Water Rates

Manager Marifaye H. Ersando of the Commercial Division presented a powerpoint of the proposed water rate adjustment.

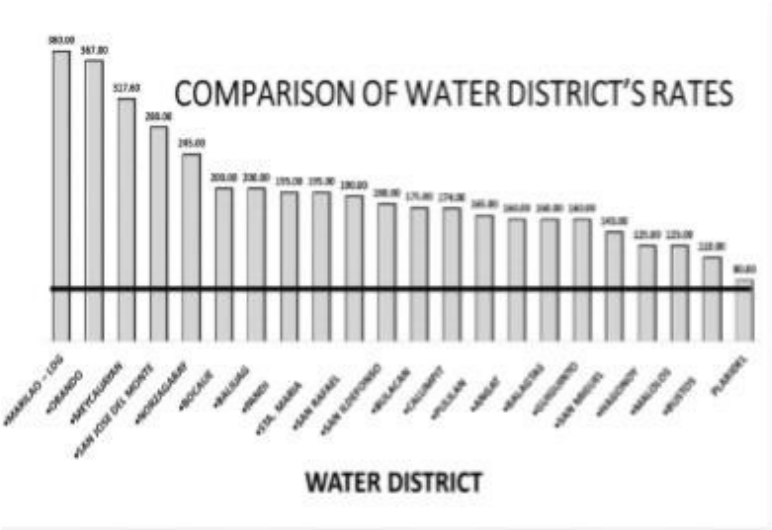
The presentation covered the following topics:

1. Existing and Proposed Water Rates Series

Existing & Proposed Water Adjustments

	Minimum Charge	11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	41-50 cu.m.	51-up cu.m.
2001	80.00	8.50	9.50	10.60	11.80	13.10
2020	124.00	13.20	14.75	16.45	18.30	20.30
2022	170.00	18.10	20.25	22.55	25.10	28.00

2. Comparison of WDs Rates



3. Comparison of 2001 & 2019 Prices

Comparison

10 cu m. = 50 drums = 124.00 pesos
1 cu m. = 5 drums = 12.40 pesos
1 drum = 2.48 pesos

Comparison	Year 2001	Vs.	Year 2019
 Minimum Wages	Php 228.50		Php 408.00
 Cigarette per pack	Php 45.00		Php 120.00
 Goto	Php 10.00		Php 30.00

Page 3 of 8

4. Comparison of Water Rates vs "Vices"

5. Automatic cost adjustments based on formula approved by LWUA BOT Res. No. 109 series of 2014

a. Power Cost Adjustment
This formula is applied when water is pumped using electricity.

$$PCA = \left[\left[\frac{PCa}{1+EF}\right] - PCb\right] (Ba/Bb)$$

Where:

PCA = Power-Cost Adjustment in P/cu.m.
PCa = Current Power Cost per cu.m.
PCb = Base Power Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.
EF = Escalation factor (inflation rate as provided by NEDA per LWUA BOT Res. No. 105 Series of 1998)

b. Fuel-Cost Adjustment
This formula is applied when water is pumped using fuel.

$$FCA = \left[\left[\frac{FCa}{1+EF}\right] - FCb\right] (Ba/Bb)$$

Where:

FCA = Fuel-Cost Adjustment in P/cu.m.
PCa = Current Fuel Cost per cu.m.
PCb = Base Fuel Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.
EF = Escalation factor (inflation rate as provided by NEDA per LWUA BOT Res. No. 105 Series of 1998)

Page 4 of 8

6. Water Meter Maintenance Fee

By virtue of Board Resolution No. 81, Series of 2017, the district imposed a Php20.00 water meter maintenance fee to all concessionaires effective July 1, 2017.

IX. Open Forum

The open forum started immediately after the presentations were completed. The open forum was facilitated by Mr. Edgardo De Leon of the Commercial Division. The rules of the public hearing before questions, queries, comments, or suggestions were emphasized that those who ask questions or make comments must introduce himself/herself first by stating their name and location for proper identification.

Summary of the issues and concerns raised during the open forum are as follows:

1. Ms. Efipania Perez, Brgy. Dampol

Q: With the current minimum rate of Php80.00, the district was able to pay its debt. Why is it still necessary to raise the rate? There is also the additional Php20.00 water meter maintenance fee, how long do we have to pay for it? With the rate increase next year, and another increase in the succeeding years, isn't it possible that the water district will become private?

A: (IGM Viloria) The water district did not have any rate increase since 2001. With the minimum rate of Php80.00 from 2001 until 2019, what is the status of the water district? Compared to other water districts in Bulacan, the Php124.00 rate is still the lowest rate. Since 2001, commodities had gradually increased prices. With this, we can say that the rate increase is reasonable. The district may have survived with the Php80.00 rate for a long time, but the service suffered.

2. Kagawad Reimerio Ravago, Brgy. Parulan

Q: If in case the district will not be able to survive, is there a possibility of privatization? For Engr. Reynante, there are many new installations, road diggings that are not being repaired.
A: (IGM Viloria) With regards to privatization, privatization is not on the PLAWD's agenda. Privatization only happens if the district cannot meet the concessionaires' needs.

A: (DM Francisco) As we have seen in recent months, the work of our staff is not in line with the standards. So far, the district's program includes standardizing the work according to the DPWH's specifications. If you looked at what we did in Isabel Village, Tabang, a few months ago, the concrete we put in was not damaged. The district's program also included the repair of the previous works that have not been restored yet.

3. Antonio Manuel, Brgy. Bulihan

   Q: As mentioned, the last rate increase was in 2001, my service was connected in 2017, is it possible to adjust the implementation of the proposed rate increase on my account?

   A: (IGM Viloria) The proposed rate increase is applicable to all accounts regardless of when the service was connected.

4. Q: Is the water meter maintenance fee of Php20.00 a lifetime charge?

   A: (IGM Viloria) There is a cycle that every 5 years, the water meter will be replaced if necessary. In 2016, the collection of water meter maintenance fee was implemented to ensure that every 5 years, the water meters are calibrated to test if it is still functioning properly. According to our study, there are water meters that malfunctions after 5 years. With the water meter maintenance fee, once a water meter is found defective, it will be replaced with a new one. If the water district can absorb the fee after the water rate increase and after further study, it is possible that the water meter maintenance fee will be removed. In the meantime, the Php20.00 water maintenance fee will still be included in the water bill.

5. Ruben Maglingkod, La Mirada Subdivision

   Q: This is a rush public hearing, is this the final public hearing? According to legalization, we need to have 3 hearings. How many percents of the population in Plaridel is required before a public hearing can be conducted? Is the number of attendees sufficient to carry out the hearing?

   A: (IGM Viloria) In accordance with public hearing guidelines, we notified all concessionaires at least 15 days prior to this hearing schedule. Posters were also be posted in barangays at least 7 days before the hearing. More than 15 days before the hearing, all concessionaires were notified to attend the public hearing through their water bill. Also, our meter readers have a notification letter about the hearing that concessionaire signed after they receive their water bills. It is not required that the majority of the Plaridel's population should be present before a hearing can proceed.

There are no other scheduled public hearings. This hearing is valid for 5 years. If the water rate is not approved within 5 years, this hearing will expire.

Q: Where does Angat Dam supply their water? Why is it that water districts in Bulacan could not get water from Angat Dam? Is it not possible to ask for a water supply line from Angat Dam? How come Maynilad is able to get supply from Angat Dam?

A: (IGM Viloria) PLAWD receives a minimum contracted volume of 2 million liters of water daily from Bulacan Bulk that is connected to Angat Dam. We buy water from Bulacan Bulk at Php9.52/cu. m. despite our minimum water rate of Php8.00/cu.m. The Bulacan Bulk project started in 1992 with a signed agreement with MWSS, water districts, and other government agencies to tap to Angat Dam and supply water to Bulakeños. This project was only completed this year. Obando, Meycauayan, Bocaue, Marilao, including Plaridel Water District, are currently receiving water supply from Bulacan Bulk. The project will expand through Pulilan up to San Miguel.

6. Emily Mariano, Brgy. Lumangbayan

Q: Why is the water supply so dirty especially every morning from 4:00 am to 5:00 am? Does increasing the water rate will help get rid of dirty water?

A: (DM Francisco) PLAWD had been receiving complaints not just about dirty water but also about low pressure. According to our study, low pressure, dirty, and smelly water are caused by many factors including damaged pipelines, illegal connections, set-up of booster pumps, and lack of check valves on water meters.

7. Councilor Myra Navarro, Brgy. Sta. Ines

Q: There are many poor Plaridelians and the sudden increase in water rate is too much, can this be lowered? Wouldn't this sudden increase caused PLAWD to become Maynilad? If we do not have funds for our projects, we can seek help from the Capitol, the Governor, and even from President Duterte. It is a big problem if the funds will be taken from small citizens.

A: (Mr. De Leon, Commercial Division) PLAWD is a Government-Owned and Controlled Corporation. The Local Government and other higher Government Agencies' beneficiaries are the citizens and small projects.

A: (IGM Viloria) As mentioned and answered earlier, a water district will only be subject to privatization if the district opts for it or it does not have funds. Privatization is not on the PLAWD agenda. Low-income groups are protected because the minimum water rate should not exceed 5% of their monthly average income.

8. Kagawad Reimero Ravago, Brgy. Parulan

C: For now, let us focus on the Php124.00 first and not on the Php170.00. We are all in favor of the Php124.00 rate increase.

X. Closing

The Public Hearing adjourned at 1:23 pm.

Prepared by:

LIZANDRO SANTOS
Secretary C, Office of the BOD

Certified Correct:

ESMERALDO L. VILORIA
Interim General Manager

ANNEX 7
PROCEDURE FOR PHYSICAL-CHEMICAL AND BACTERIOLOGICAL TEST

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **PHYSICAL-CHEMICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

1.0 OBJECTIVES

1.1 Establish guidelines in the engineering division for Physical Chemical Test

2.0 SCOPE

2.1 This procedure defines the responsibilities and authorities for the testing and inspection of water by the responsible laboratories.

3.0 REFERENCES

3.1 ISO 9001:2015 Section 8.3-8.4
3.2 Procedure for Documented Information
3.3 Philippine National Standards of Drinking Water 2017

4.0 RESPONSIBILITIES AND AUTHORITIES

4.1 Division Manager (Engineering), Senior Engineer, Water Facilities Operator

5.0 PROCESS

5.1 General

5.1.1 The Engineering Division Manager shall require the list of Parameters to be used.
5.1.2 The Engineering Division Manager shall provide sampling locations.

5.2 See process flow

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **PHYSICAL-CHEMICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

PHYSICAL-CHEMICAL TEST FLOW CHART

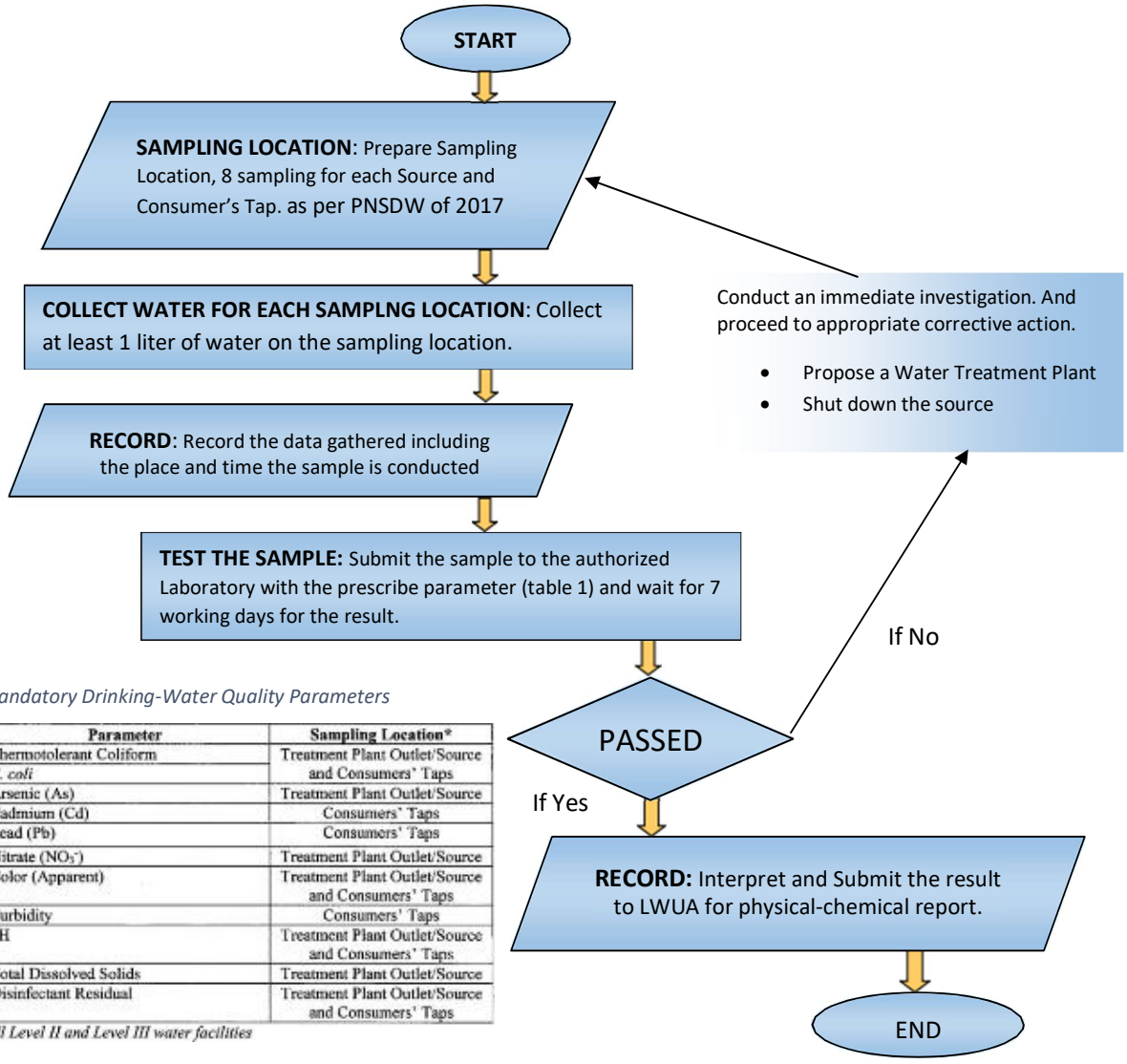


Table 24. Mandatory Drinking-Water Quality Parameters

No.	Parameter	Sampling Location*
1	Thermotolerant Coliform	Treatment Plant Outlet/Source and Consumers' Taps
	E. coli	
2	Arsenic (As)	Treatment Plant Outlet/Source
3	Cadmium (Cd)	Consumers' Taps
4	Lead (Pb)	Consumers' Taps
5	Nitrate (NO_3^-)	Treatment Plant Outlet/Source
6	Color (Apparent)	Treatment Plant Outlet/Source and Consumers' Taps
7	Turbidity	Consumers' Taps
8	pH	Treatment Plant Outlet/Source and Consumers' Taps
9	Total Dissolved Solids	Treatment Plant Outlet/Source
10	Disinfectant Residual	Treatment Plant Outlet/Source and Consumers' Taps

**applicable to all Level II and Level III water facilities*

Note: In case of exceedance of standard values of physical and chemical parameters, monitoring shall be carried out for the next three (3) consecutive months wherein all results must comply with the standards. If the result still exceed, further study must be done to determine the cause of contamination for proper identification of corrective actions.

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **PHYSICAL-CHEMICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

6.0 RECORDS

6.1 Physical-Chemical test form

6.2 Water Analysis result

6.3 PNSDW/LWUA requirements

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **BACTERIOLOGICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

1.0 OBJECTIVES

1.1 Establish guidelines in the engineering division for Bacteriological Test

2.0 SCOPE

2.1 This procedure defines the responsibilities and authorities for the testing and inspection of water by the responsible laboratories.

3.0 REFERENCES

3.1 ISO 9001:2015 Section 8.3-8.4
3.2 Procedure for Operation and Pumping
3.3 Procedure for Documented Information
3.4 Philippine National Standards of Drinking Water 2017

4.0 RESPONSIBILITIES AND AUTHORITIES

4.1 Division Manager (Engineering), Senior Engineer, Water Facilities Operator

5.0 PROCESS

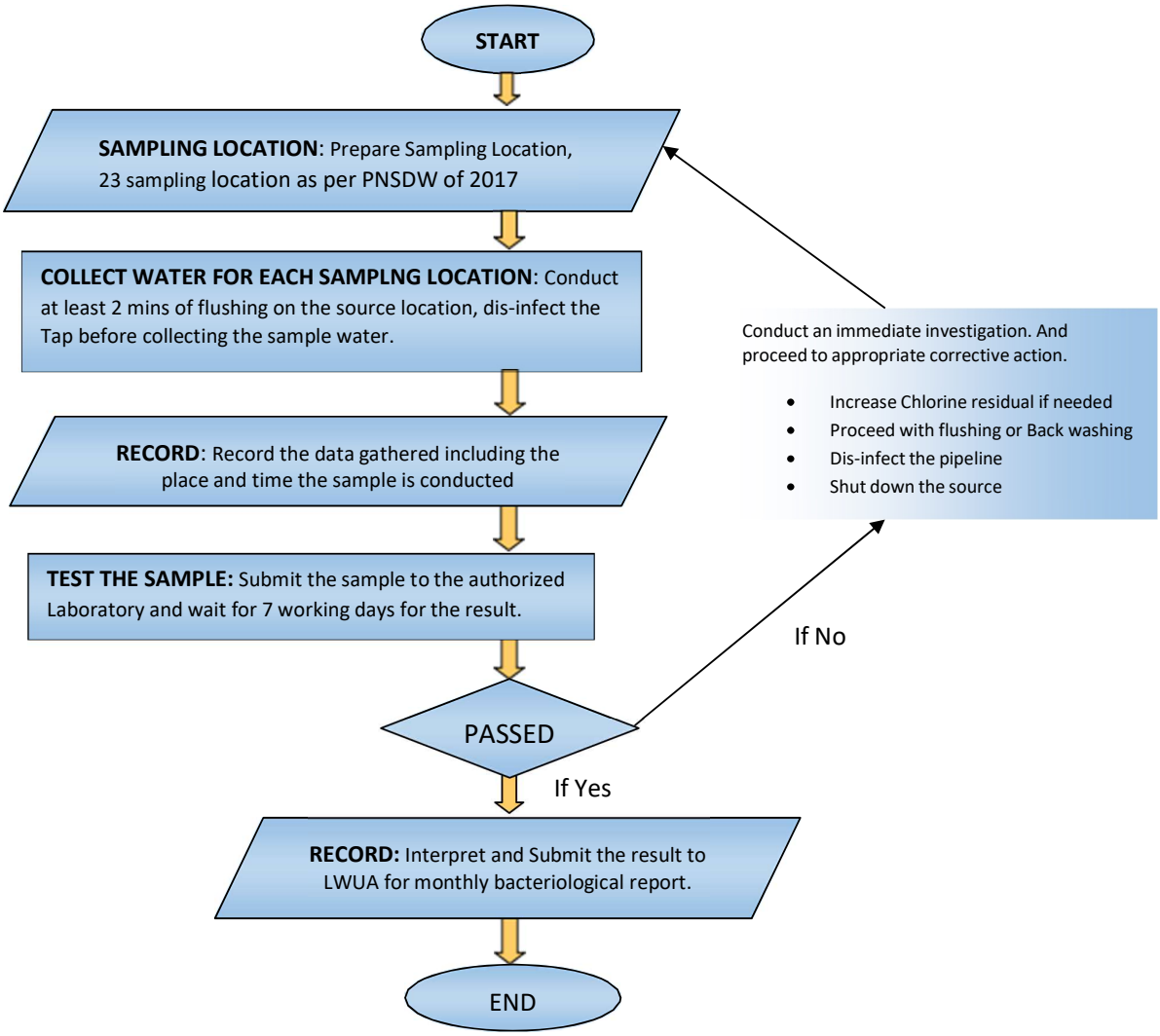
5.1 General

5.1.1 The Engineering Division Manager shall require the amount of Chlorine Dioxide as specified on the regulatory requirements.
5.1.2 The Engineering Division Manager shall provide sampling locations.
5.1.3 The approved residual of Chlorine Dioxide must be approved by LWUA prior to application.
5.1.4 Monitoring of the application will be regulated using the Chlorine Comparator.

5.2 See process flow

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **BACTERIOLOGICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

BACTERIOLOGICAL TEST FLOW CHART



Note: When E. coli/ Thermotolerant Coliform is present in water, a sanitary survey which includes resampling. If resampled water still contains E. coli/ Thermotolerant, corrective action should be applied. At the same time. the driving water provider shall issue an advisory to "boil water". Or other household water treatment options, or provide an alternative drinking water supply. (PNSDW 2017)

PLAWD 1987 PLARIDEL WATER DISTRICT	**Procedure** **BACTERIOLOGICAL TEST**	Date prepared : Date approved : Effectivity Date : Revision No. : Revision Date : Control No. :
Reviewed by:		Approved by:

6.0 RECORDS

6.1 Physical-Chemical test form

6.2 Water Analysis result

6.3 PNSDW/LWUA requirements

ANNEX 8
ADDITIONAL ATTACHMENT

Bintog Pump Station

The existing pumphouse of PLAWD inside the compound of the Bintog Pump Station will be removed by the contractor during the execution of the contract. A contractor's environmental management plan (CEMP) shall be submitted prior to start of construction to mitigate and manage potential environmental impacts of pumphouse removal and new building construction. A health and safety plan, including work protocols to prevent COVID-19 transmission in the workplace will be included in the CEMP.

ANNEX 2

Gender Action Plan

GENDER ACTION PLAN

1. **Gender Classification**. The purpose of the Project is to target less resilient water districts (WDs) in cities and municipalities outside Metro Manila including the WDs in San Fernando (La Union) and the City of Koronadal, to fund the extension and rehabilitation of their water supply (e.g., the construction of new deep wells, transmission and distribution pipelines) and sanitation projects, as well as capacity building development and institutional strengthening for the executing agency, Local Water Utilities Administration (LWUA) and WDs. Women will benefit from the Project through affordable tariffs and other pro-poor initiatives, capacity building and representation on WD Boards. The project is classified as effective gender mainstreaming (EGM) in design.

2. **Gender Action Plan (GAP) Purpose and Strategy**. The 2009 socio-economic survey shows that a small portion of households in the target WDs have piped water connections and sanitation facilities (11-18%). Among the poor in these cities, 90% of them don't have water connections despite LWUA's socialized tariff policy. The significant social and economic burden of illness, health care for the family, child care, water fetching, food preparation and other associated domestic responsibilities associated with not having water and sanitation connections, falls primarily on women. Women are positioned to benefit from the project's interventions due to their central role in water, hygiene and sanitation management. At the community level, women's participation in water system operations is low as there are no formalwater associations in the pilot service areas in which theycould participate in the operation and maintenance of water and sanitation facilities. The Government's existing framework for gender action is not being maximized by LWUA and the pilot WDs.[1] LWUA and the pilot WDs have designated gender focal points and gender and development (GAD) programs. However, their GAD budgets have not been fully utilized, with limited gender-specific activities such as capacity-building for increased women's participation in technical operational roles. The Project's gender strategy will facilitate women's participation and benefits through GAP implementation (see Table below). These include enhanced hygiene and sanitation awareness and training, connections to proper water supply and sanitation, capacity building, and representation on WD Boards. Pro-poor measures include lifeline tariffs and initiatives for affordable access (e.g. socialized and/or installment schemes for connection fees).

3. **Implementation and Monitoring Arrangements**. The Borrower shall ensure that it complies with all relevant laws and regulations related to gender actions.[2] A responsibility center will be created at LWUA/project management unit (PMU), with the designation of an employee to monitor GAP implementation by LWUA and participating WDs (including preparing 6-monthly progress reports and ensuring that the bidding documents and contracts include relevant provisions for contractors to comply with the measures set forth in the GAP) and to provide implementation support to the conduct of GAP activities, such as training and capacity-building on required competencies of the project implementation units (PIUs) in compliance with those aspects of the GAP applicable to the WD. Similarly, each WD will be set up a responsibility center and a gender focal person responsible for preparing and implementing a gender action plan for the WD in order to ensure the WD's compliance with those aspects of the GAP

[1] Including Republic Act No. 7192 ("Women in Development and Nation-Building Act" passed on February 12, 1992), Executive Order No. 273 ("Approving and Adopting the Philippine Plan for Gender-Responsive Development, 1995 to 2025" passed on September 8, 1995), and Joint Circular No. 2004-1 issued by the Department of Budget and Management (DBM), the National Economic and Development Authority (NEDA) and the National Commission on the Role of Filipino Women which prescribes guidelines and procedures for the formulation and submission of agency annual GAD plans and budgets, and GAD accomplishment reports.

[2] See footnote 1.

applicable to the WD, including the preparation of budgets for, and the implementation, updating and monitoring of, the WD's gender action plan. Other staff members of the WD will be engaged to assist with various activities in the WD's gender action plan.

4. **GAP Budget**. LWUA will allocate a yearly budget for the implementation of the GAP, which will be taken from its GAD budget. In addition to enhancing its own GAD capacity, LWUA will work with participating WDs to ensure that compliance with those aspects of the GAP applicable to them.

Table 11.1 GAP Budget (pesos)

Budget Item	Year 1	Annual Budget Years 2 to 6
Training of LWUA's and WDs' gender focal points on GAP implementation and monitoring	400,000	200,000
Capacity building of LWUA and WDs staff on gender analysis, gender-responsive planning and budgeting	600,000	300,000
Supervision and monitoring of GAP implementation – database creation and maintenance	200,000	200,000
Total	1,200,000	700,000

GAP = Gender Action Plan, LWUA = Local Water Utilities Administration, WD = water district

Table 11.2 Summary of Gender Action Plan

Project Output	Proposed Actions and Targets
Client-Focused	
Output 1: Expansion and improvement of water supply systems; sanitation projects	➢ Information dissemination on new water services targeting poor households in the existing and expansion water service areas. ➢ Promoting affordability to low-income households including ensuring the minimum charge for monthly water consumption should meet LWUA's guidelines for low-income households in the areas served by participating water districts (WDs). ➢ Partnership with barangay health workers/units and non-government organizations (NGOs) for delivery of sanitation information education and communication (IEC) and training. Per subproject, IEC training for 100 barangay health workers, science, public school teachers (50% are female). ➢ Ensuring WDs consult with women and men separately about content, format, and media for IEC messages.
Organization-Focused	
Output 2: Capacity and institutional development for participating WDs and LWUA.	➢ Training to enhance sustainability of operations for WDs (business planning, project implementation, management information system [MIS], non-revenue water [NRW] reduction) (at least 30% of participants are female).[3] ➢ Designation of an employee to coordinate, monitor and report on implementation of GAP activities. ➢ Capacity development of LWUA/WDs in gender analysis, gender-responsive planning, gender budgeting, and GAP compliance. ➢ At least 30% of LWUA's overall staff and management at project management unit are female. [4] ➢ Encouraging the appointment of at least 2 women on the Board of each participating WD, of which one is a representative of a women's organization (e.g. a relevant NGO or national women's group). ➢ Allocation from LWUA's yearly GAD budget to its GAP budget to support project implementation. ➢ Detailed project performance monitoring (including compliance with GAP), reporting, accounting, and auditing systems developed, with collection of sex-disaggregated data, provide 6-monthly reports and feed data into mid-term review and Project Completion Report.

[3]Baselines will be collected for LWUA and each participating WD. If the baseline indicates a higher % of female representation than the 30% target, an appropriate higher target will be incorporated and reported to ADB.

[4]See footnote 3.

ANNEX 3

Due Diligence Report for Resettlement

Social Safeguards Due Diligence Report

April 2020

Philippines: Water District Development Sector Project – Plaridel Subproject

Prepared by Plaridel Water District for the Local Water Utilities Administration and the Asian Development Bank.

Social Safeguards Due Diligence Report

April 2020

Philippines: Water District Development Sector Project

PLARIDEL WATER DISTRICT

Prepared by Plaridel Water District for the Local Water Utilities Administration and the Asian Development Bank.

CURRENCY EQUIVALENTS
(as of 20 March 2020)

Currency unit	–	peso (Php)
Php1.00	=	$0.01955
$1.00	=	Php 51.15

ABBREVIATIONS

ADB	–	Asian Development Bank
AH	–	Affected Household
AP	–	Affected Person
DA	–	Department of Agriculture
DMS	–	Detailed Measurement Survey
EA	–	Executing Agency
EMA	–	External Monitoring Agency
GAD	–	Gender and Development
GAP	–	Gender Action Plan
GRC	–	Grievance Redress Committee
GRM	–	Grievance Redress Mechanism
HH	–	Household
IA	–	Implementing Agency
IOL	–	Inventory of Losses
IP	–	Indigenous Peoples Plan
LGU	–	Local Government Unit
LWUA	–	Local Water and Utilities Administration
m3	–	Cubic Meter
MDG	–	Millennium Development Goal
NEDA	–	National Economic And Development Authority
NRW	–	Non-Revenue Water
PCUP	–	Presidential Commission on the Urban Poor
PIB	–	Public Information Booklet
PIU	–	Project Implementation Unit
PLAWD	–	Plaridel Water District
PMU	–	Project Management Unit
PPTA	–	Project Preparatory Technical Assistance
OCR	–	Ordinary Capital Resources
RF	–	Resettlement Framework
ROW	–	Right-of-Way
RP	–	Resettlement Plan
SAR	–	Subproject Appraisal Report
SES	–	Socio-Economic Survey
SPS	–	ADB's Safeguard Policy Statement (2009)
UFPF	–	Urban Financing Partnership Facility
WACC	–	Weighted Average Cost of Capital
WD	–	Water District
WDDSP	–	Water District Development Sector Project

NOTE

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

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SOCIAL SAFEGUARDS DUE DILIGENCE REPORT
PLARIDEL WATER DISTRICT

A. PROJECT BACKGROUND

1. Rapid urbanization and inadequate water supply and sanitation investments have stretched to the limit the capacity of services and facilities in many urban areas outside Metro Manila, and increased water resources pollution. Less than 50% of urban households are estimated to have piped water, with most served by WDs. Various studies report that WDs provide better water service compared to local government unit (LGU)-run water utilities, and attribute this to corporatization (i.e., WDs do not receive subsidies from LGUs) and to access to financing, training and technical assistance from LWUA.

2. The Project will provide to WDs much-needed funds to rehabilitate and expand water facilities, strengthen institutional capacities, and enhance sustainability. According to LWUA, 511 WDs were operational at year-end 2012. Most WD operations are plagued with low profitability, high nonrevenue water (NRW) levels, and weak institutional and limited technical capacity; over half are relatively small (with <3,000 service connections). The Project will target WDs who rely primarily on LWUA for technical support and financing; these WDs are likely to be in less developed provinces, cities and municipalities.

3. The Resettlement Framework was developed in 2014 and locations of subprojects have been finalized in 2019 requiring further due diligence for social safeguards.

4. The population and infrastructure development in Plaridel, Bulacan is continuously growing and the consequent increase in water demand cannot be sustain by the existing water network system and facilities. To provide reliable, potable and adequate water supply, PLAWD will implement the Water Supply Improvement Project which consist of transmission and distribution pipelines that will convey the water from Bulacan Bulk Water eastern part to western most part of PLAWD service area. New water reservoirs will be built in two strategic locations to cater peak hour demands and new office building will be constructed as a workplace of the growing number of employees in the district. The project will prepare the water network system to augment the existing water availability and pressure and to cope with the increasing water demand up to 2030.

B. SCOPE OF REPORT

5. This Due-Diligence report covers Plaridel's sub-project activities grouped into three contract packages as indicated in the following table. The report will detail the screening of project activities for potential IR and IP impacts.

Table 1 – Scope of Works

Contract Packages	Description
Water Supply Improvement Project	Design and build contract which includes power generating set, storage facilities with booster and transmission/distribution pipelines
Office Building/Motorpool/Warehouse	This item will cover the amount needed for the construction of PLAWD's new office building with provision for warehouse and motorpool.
Service Vehicle/Equipment	Three (3) service vehicles/equipment will be purchased to be used by PLAWD during and after project implementation. The cost allotted for this item includes delivery and other incidental expenses. One will be funded by the loan from ADB and the other two for PLAWD as an equity.

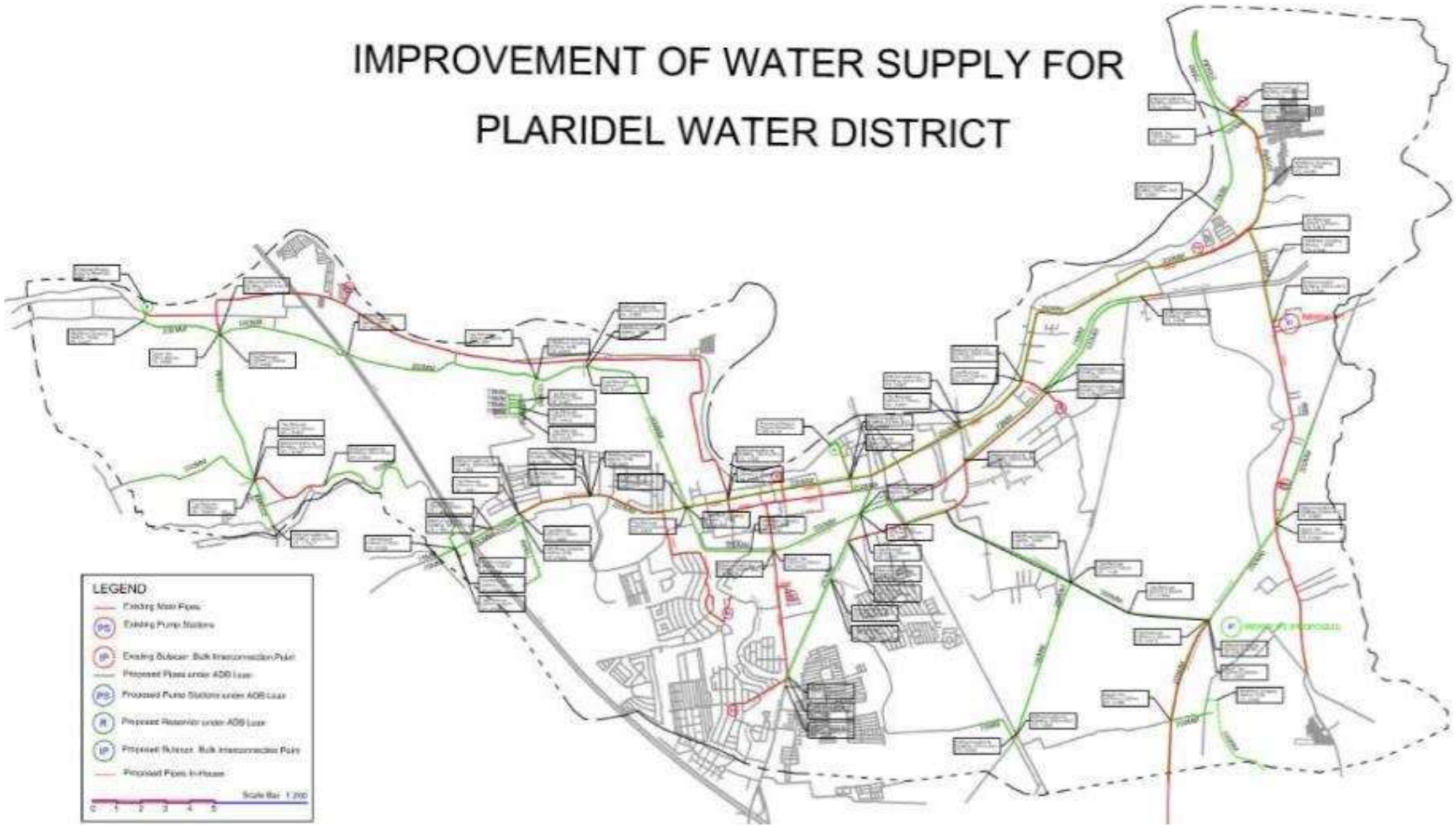

Figure 2 – PLAWD Recommended Improvements

C. SOCIAL SAFEGUARDS ASSESSMENT

6. This due diligence assessment has been carried out with reference to ADB Social Safeguards Policy Statement (SPS 2009).

7. The assessment has been informed by project plans (e.g. engineering designs), field visits to sub-project sites and representative sites of construction activities. Pictures and attendance sheet of barangay officials during consultations can be found **Appendix 3**.

Table 2 – Impact Description

Contract Packages	Description	Impact Description
Water Supply Improvement Project		
Power Generating Set	Three (3) units of 60-Kva power generating set will be purchased	None – equipment provision only
Storage Facilities with Booster	Two (2) 1,500-cum ground reservoirs will be constructed with booster pumping stations.	Land owned by PLAWD. Rueda Reservoir located in Barrio Dampol, Lot Area = 500 sq.m Banga 1st Reservoir located in Barrio Banga 1st, Lot Area = 500 sq.m The Transfer Certificate of Title is presented in **Appendix 4**.
Transmission/Distribution Lines	A total of about 28,236 linear meter (lm) of transmission/distribution pipelines with sizes ranging from 150-500 mm uPVC and steel pipes will be installed	No Land acquisition. Temporary disruption during pipe laying of pipelines or expansion of pipeline works. This will be detailed in the EMP and a summary of this is included below. All works will be within the ROW
Office Building/ Motorpool/Warehouse	Construction of PLAWD's new office building with provision for warehouse and motorpool.	Land owned by PLAWD. Brgy. Bintog, Lot Area = 1,190 sq.m
Service Vehicle/Equipment	Purchase of Three (3) service vehicles/equipment	None – equipment provision only

D. CATEGORIZATION

8. Based on the assessment of planned works, all civil works will be conducted within the ROW and within a further limited COI to avoid impact. The work will have no impact on primary structures, secondary structures, agricultural land, crops, trees and/or personal/communal assets. As there will be temporary disturbance but no anticipated economic displacement or business disruption a functional GRM is of utmost importance.

9. There is no planned land acquisition as all civil works will take place either within the ROW or within existing facilities already owned by Plaridel Water District.

10. The Project is therefore categorized as C for involuntary resettlement impacts as per ADB's Safeguard Policy Statement, 2009 (SPS) and the checklist can be found in Appendix 1

11. To trigger the IP safeguard policy statement, the proposed sub project will impact (positively or negatively) people who;

- Self-identify as members of a distinct cultural group which is recognized by others
- Have a collective attachment to geographically distinct territories
- Have cultural, economic, social or political institutions that are separate from
- Have a distinct language.

12. Sociocultural groups therefore need to be both distinct and vulnerable to trigger application of the term Indigenous Peoples in the SPS for ADB-supported projects.

13. This sub-project does not impact on any households, structures or land who meet the above criteria. The sub-project is therefore categorized as C for Indigenous People as per ADB's Safeguard Policy Statement, 2009 (SPS) and the checklist can be found in Appendix 2

E. MITIGATION MEASURES

14. Proposed mitigation measures to minimize risk of potential impacts are summarized in the table below. This sub-project does not trigger ADB SPS for IR as there is no involuntary land acquisition and any disruption of access will be temporary. Therefore, the mitigation measures shown below will be described within an Environmental Management Plan (EMP).

15. These mitigation measures will also be detailed in the bidding documents and contractor TORs and reported on in the integrated ESMR which will be submitted twice a year. A functional Grievance Redress Mechanism will be integrated into the current customer services feedback mechanism that has already been developed by Plaridel Water District.

Table 3 – Mitigation Measures

Potential Impacts	Mitigation Measures	Detailed in:
Impact to any existing road or pavement surfaces,	Contractor will restore to the original condition.	EMP, bidding documents and TORs of contractors.
Restricted access to residences and commercial premises due to replacement / installation of pipelines. All works will be within the ROW but there may be traffic disruption.	Avoid disturbances by carrying out works overnight and reducing traffic disruption during the day using metal sheeting. Avoid blocking access to properties alongside the road during any construction activities; Provide steel sheets to reduce access issues	EMP, bidding documents and TORs of contractors.
Unanticipated impacts – Management of construction	GRM to be set up and integrated into current system, single point of entry, contractors to be aware, signboards at construction locations and in Barangay office to inform any affected person of entry point into GRM. Ensure contractor implements agreed measures to reduce impact and temporary disturbance.	EMP, bidding documents and TORs of contractors.
Unanticipated impacts	Any unanticipated resettlement impacts will be subject to mitigation measures as detailed in the entitlement matrix.	EMP

F. CONSULTATION AND PARTICIPATION

16. This section has been updated from the RF as meetings with Water Districts have refined the procedures for community consultation that will ensure successful implementation and are a supplement to those measures already set out in the RF.

17. PLAWD will inform the Barangay of the planned construction schedule and ensure that information about expected timelines and road disruption is clearly communicated prior to the start of any civil works.

G. GRIEVANCE REDRESS

18. Following discussions during the DDR mission, it was agreed to integrate the ADB required GRM into the current consumer feedback measures that are already implemented and are well established.

19. The DDR mission observed a publicly displayed customer charter and system to record issues with water supply, billing and complaints.

20. The management team were aware of the need to be able to respond to issues in a timely manner and will separate project related grievances from ongoing supply issues for reporting to ADB and LWUA.

21. A member of the PLAWD team will be appointed to be the focal point for GRM management and will liaise and inform Barangay administration of procedures in case of any issues.

22. The Project's grievance redress mechanism shall in no way impede access to the formal legal system or the courts. The decision of the courts is for finality of case resolution. Below are the steps to be followed in filing grievances and the procedures for redress.

> ***Step 1:*** The complainant provides the background and files the grievance/complaint verbally or in writing to the PLAWD. If unwritten, the Secretary in the PLAWD Office will record it in the PLAWD complaints system noting it as a project grievance. The focal point for PLAWD will respond to the complainant within 3 days to assess whether the issue is project related and aim to resolve the issue and record it within the project grievance register.
>
> ***Step 2:*** If no resolution or understanding is reached, the complainant files the grievance/complaint to the PMU within LWUA for it to be resolved within 15 days after filing. The written complaint shall be reproduced in four copies; the original to EA-PMU, two for WD-PIU, and one for the file of the complainant.
>
> ***Step 3:*** The Lupon ng Kapayapaan ng barangay (justice system members) whenever possible, to resolve the issue at the barangay level. The barangay process may take 15 days or more, including submission of complaint, recording, hearing and resolution.
>
> ***Step 4:*** Again, if no resolution or understanding is reached and if the grievance/complaint qualifies for hearing at the Municipal Trial Court (MTC) or Regional Trial Court (RTC), the household may request for assistance of the *pro bono* lawyer from the Public Attorney's office, through the PLAWD. The *pro bono* lawyer shall assist the household in reproducing the formal complaint in five copies to be

distributed as follows: the original to the appropriate court, one each for PMU, PIU, WDRC and for the file of the complainant.

Step 5: The MTC or RTC assesses the merit of the grievance/complaint, schedules the hearing and renders a decision. Appeals can be elevated to the high court. The Supreme Court's decision is final and executory.

Aggrieved parties may also inform the Office of Special Project Facilitators (OSPF) of the ADB of any project-related grievances.

APs will be exempted from all administrative and legal fees.

23. Unresolved grievance can be elevated to the proper courts. The PLAWD will maintain a full record of all complaints and grievances received, and the actions taken.

24. PLAWD will also ensure grievances are recorded and reported on in the Integrated Environmental and Social Safeguards reports that are submitted to ADB every 6 months during project implementation

Table 4 – Site Photos

Proposed Office Building/Motorpool/Warehouse will be located in the existing compound of Centennial Pump Station No. 3 in Bintog, Plaridel, Bulacan

Proposed Rueda Reservoir will be located in Barrio Dampol, Plaridel, Bulacan

Proposed Banga 1st Reservoir will be located in Brgy. Banga 1st, Plaridel, Bulacan.

Table 3 - Project Entitlement Matrix

Item	Type of Loss	Application	Entitled Persons	Compensation Policy	Implementation Issues
1a	Permanent loss of land	Agricultural/ residential/ commercial land/vacant plot	APs listed in the survey with proof of ownership/ claim to the land.	Compensation for entire loss of land (i.e., the whole land is affected by the Project, or the residual unaffected portion is no longer viable for continued use and, therefore, the entire land will be acquired by the Project) and partial loss (i.e., only a portion of the land of the AH is acquired by the Project and the residual unaffected portion still viable for continued use or meets the expected yield) is based on the principle of replacement cost which is the method of valuing assets to replace the loss at prevailing market value, plus any transaction costs such as administrative charges, taxes, registration and titling costs. If AH is found to be severely affected (i.e., the loss is equivalent to 10% or more of their total income capacity or they are physically displaced from housing or place of business), the AH will be provided additional assistance as discussed under item 4 (severe impacts) of this entitlement matrix.	Computation of valuation of land must be transparent and explained to the entitled persons If there are grievances in valuation, entitled persons must be informed of the grievance mechanism
1b	Permanent loss of land	Agricultural/ residential/ commercial land/vacant plot	APs without proof of ownership/claim to the land they occupy	Not entitled to payment for land but will be compensated for non-land assets (structures, crops, trees, etc.) at replacement cost. Entitled to cash or in-kind assistance if severely affected.	List of non-land assets to be compensated must be signed off by entitled persons Vulnerable and severely affected persons to be identified during census

Item	Type of Loss	Application	Entitled Persons	Compensation Policy	Implementation Issues
1c	Permanent loss of land	Agricultural/ residential/ commercial land/vacant plot	Tenants/ shareholders	Entitled to compensation for non-land assets (structures, crops, trees) at replacement cost. Entitled to cash or in-kind assistance if severely affected.	List of non-land assets to be compensated must be signed off by entitled persons Vulnerable and severely affected persons to be identified during census
2	Permanent full or partial loss of structures or income-generating spaces	Residential/commercial /institutional structures and income-generating spaces	AP owners located at the site during the cut-off date of the survey, regardless of tenure and status (i.e., owners, renters, sharers, caretakers)	Compensation for permanent houses and other structures affected either in full (i.e., entire main structure is affected, or the unaffected portion of the main structure is no longer viable for continued use), or in part (i.e., only a portion of the main structure of the house, house-and- store, or shop is affected and the remaining unaffected portion is still viable for use), will be determined according to replacement value for materials and labor to rebuild similar structures, at prevailing market prices in the locality. In determining replacement costs, depreciation of assets and salvage value of materials will not be taken into account. In determining compensation for movable structures including houses, where the structures can be moved easily, transfer, relocation and repair allowances will be calculated. An assessment of material replacement will be made, based on the condition of materials, with valuations calculated based on standard replacement and restoration costs. Provision of transition and moving allowance/assistance (cash or in-kind) for APs that opt for voluntary relocation.	List of structures to be compensated must be signed off by entitled persons. Computation of the valuation of affected structures must be explained to entitled persons. If there are grievances in valuation, entitled persons must be informed of the grievance mechanism.

Item	Type of Loss	Application	Entitled Persons	Compensation Policy	Implementation Issues
3	Permanent loss of crops and trees	All trees of any age, crops	All APs regardless of tenure status	Cash compensation equivalent to (i) for annual standing crops, prevailing market value of crops; (ii) for perennial crops, prevailing market value given the type, age and productive value; and (iii) for trees, the productive value or the annual production as determined by the municipal agriculturist multiplied by the estimated number of productive years; all at the time of compensation. 60 days' notice to allow owners to harvest any standing crops	List of trees and crops to be compensated must be signed off by entitled persons Computation of the valuation of trees and crops must be explained to entitled persons
4	Severe impacts (more than % of productive income affected) on productive assets	Land-based income, income from trees and crops, income from business	All APs losing 10% or more of their productive income from business and other income- generating assets. regardless of tenure status	Compensation for lost income based on actual impacts as a result of DMS. Appropriate rehabilitation measures and income restoration programs Project assistance for affected households such as job referral and placements and assistance to be trained additional skills for local employment or income-generating ventures. Additional project assistance (cash or in- kind) to poor and vulnerable households will be provided	Severely impacted (more than 10% impacted) households to be identified during census
5	Temporary Loss / impact on assets during construction	Residential structures, improvements and other physical assets affected during construction	APs with improvements of their residential or business structure (e.g. fences, driveways) and other physical assets on lots to be traversed by transmission pipes	Cash or in-kind compensation for fixed and movable assets such as houses, pavements, fences community facilities, farm structures for animals and farmers at replacement cost. Restoration or replacement of a fixed asset one month after construction of water transmission and distribution lines, sanitation facilities, reservoirs and other water facilities. Compensation for residential structures and community facilities, lost in full or part.	List of affected structures to be signed off by entitled persons. Schedule construction activities to minimize the period of disruption. Computation of the compensation must be explained to entitled persons

Item	Type of Loss	Application	Entitled Persons	Compensation Policy	Implementation Issues
6	Temporary loss of income	Income from livelihood, business or employment	APs with businesses or employment disrupted during construction	Compensation for lost income or wages calculated at prevailing and/or average historical rate multiplied by the number of days of disruption	APs and corresponding income losses per day to be identified during census
7	Temporary Loss/impact on access	Roads, pathways and access routes used by APs to conduct economic, social or cultural activities	APs whose access to land or facilities will be affected during construction	Alternative access routes shall be provided to temporarily replace the affected route.	Convincing owners of land to provide temporary access on their land
8	Any unanticipated impacts/losses		APs entitled to compensation as per RF	Any unanticipated impact or loss will be mitigated as per WDDSP RF	Close monitoring of unanticipated impacts during implementation phase

APPENDIX 1
INVOLUNTARY RESETTLEMENT IMPACT CATEGORIZATION

Date: 8 April 2020

A. Project Data

Country/Project No./Project Title : **Loan 3389/Grant 0477 – PHI: Water District Development Sector Project Plaridel Water District Subproject**

Department/ Division : SEUW

Processing Stage : Active

Modality :

[ ] Project Loan [ ] Program Loan [ ] Financial Intermediary [ ] General Corporate Finance
[X] Sector Loan [ ] MFF [ ] Emergency Assistance [X] Grant
[ ] Other financing modalities: Sector development program (linked program loan + project loan)

B. Involuntary Resettlement Category

[**X**] New [ ] Recategorization — Previous Category [ ]

[ ] Category A	[ ] Category B	[**X**] Category C	[ ] Category FI

C. Comments

The proposed project of the Plaridel Water District (PLAWD) will not entail any involuntary resettlement. There are no adverse impact on structures and the impact on people, which is temporary, may be on access to their residences or places of business/livelihood during construction.

The lot where facilities will be built are already owned by PLAWD: 500 m² at Barrio Dampol, 500 m² at Banga 1st and 1,190 m² in Brgy. Bintog,

D. Approval

Proposed by: Joseph Lalo Social Safeguards Consultant CDTA Date:8/4/2020	**Reviewed by**: Social Safeguard Specialist, SEUW Date:	
	Endorsed by: Director, Date:	
Social Development Specialist, Date:		
Endorsed by: Director Date:	**Approved by**: Chief Compliance Officer Date:	[ ] Highly Complex and Sensitive Project

Involuntary Resettlement Impact Categorization Checklist

Probable Involuntary Resettlement Effects	Yes	No	Not Known	Remarks
Involuntary Acquisition of Land				
1. Will there be land acquisition?		**X**		The land where the facilities and structures will be erected is already owned by the PLAWD.
2. Is the site for land acquisition known?	-	-	-	No need for land acquisition
3. Is the ownership status and current usage of land to be acquired known?	-	-	-	Land already the property of WD
4. Will easement be utilized within an existing Right of Way (ROW)?	**X**			Pipe laying will be within the RROW
5. Will there be loss of shelter and residential land due to land acquisition?		**X**		
6. Will there be loss of agricultural and other productive assets due to land acquisition?		**X**		
7. Will there be losses of crops, trees, and fixed assets due to land acquisition?		**X**		
8. Will there be loss of businesses or enterprises due to land acquisition?		**X**		
9. Will there be loss of income sources and means of livelihoods due to land acquisition?		**X**		
Involuntary restrictions on land use or on access to legally designated parks and protected areas				
10. Will people lose access to natural resources, communal facilities and services?		**X**		
11. If land use is changed, will it have an adverse impact on social and economic activities?		**X**		
12. Will access to land and resources owned communally or by the state be restricted?		**X**		
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? [**X**] No [ ] Yes If yes, approximately how many? No physical displacement of persons				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? [**X**] No [ ] Yes **Not applicable – as there will be no physical displacement of persons**				
Are any displaced persons from indigenous or ethnic minority groups? [**X**] No [ ] Yes				

Note: Further information regarding strategies to reduce disruption are contained within the EMP.

APPENDIX 2
INDIGENOUS PEOPLES IMPACT CATEGORIZATION

Date: 8 April 2020

A. Project Data

Country/Project No./Project Title	**Loan 3389/Grant 0477-PHI: Water District Development Sector Project** **Plaridel Water District Subproject**
Department/ Division	SEUW
Processing Stage	Active

Modality

[ ] Project Loan [ ] Program Loan [ ] Financial Intermediary [ ] General Corporate Finance
[X] Sector Loan [ ] MFF [ ] Emergency Assistance [X] Grant
[ ] Other financing modalities: Sector development program (linked program loan + project loan)

B. Indigenous Peoples Category

[X] New [ ] Recategorization — Previous Category [ ]

[ ] Category A	[ ] Category B	[X] Category C	II. [ ] Category FI

C. Project requires the broad community support of affected Indigenous Peoples communities. [ ] Yes [X] No

D. Comments

The proposed project of the Plaridel Water District (PLAWD) will not impact on any indigenous cultural community/person or encroach on any ancestral domain.

E. Approval

Proposed by:	**Reviewed by**:
Joseph Lalo	
Consultant for CDTA team	Social Safeguard Specialist, SEUW
Date:8/4/2020	Date:
	Endorsed by:
Date:	Director,
	Date:

Endorsed by:

Director,
Date:

Approved by:

Chief Compliance Officer
Date:

☐ Highly Complex and Sensitive Project

Indigenous Peoples Impact Screening Checklist

KEY CONCERNS (Please provide elaborations on the Remarks column)	YES	NO	NOT KNOWN	Remarks
A. Indigenous Peoples Identification				
1. Are there socio-cultural groups present in or use the project area who may be considered as "tribes" (hill tribes, schedules tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities" in the project area?		**X**		
2. Are there national or local laws or policies as well as anthropological researches/studies that consider these groups present in or using the project area as belonging to "ethnic minorities", scheduled tribes, tribal peoples, national minorities, or cultural communities?		**N/A**		There is a national law (Republic Act 8371 s. 1997) for protecting IP but it is not applicable in the project area because they are not present there.
3. Do such groups self-identify as being part of a distinct social and cultural group?		**N/A**		
4. Do such groups maintain collective attachments to distinct habitats or ancestral territories and/or to the natural resources in these habitats and territories?		**N/A**		
5. Do such groups maintain cultural, economic, social, and political institutions distinct from the dominant society and culture?		**N/A**		
6. Do such groups speak a distinct language or dialect?		**N/A**		
7. Has such groups been historically, socially and economically marginalized, disempowered, excluded, and/or discriminated against?		**N/A**		
8. Are such groups represented as "Indigenous Peoples" or as "ethnic minorities" or "scheduled tribes" or "tribal populations" in any formal decision-making bodies at the national or local levels?		**N/A**		
B. Identification of Potential Impacts				
9. Will the project directly or indirectly benefit or target Indigenous Peoples?		**X**		
10. Will the project directly or indirectly affect Indigenous Peoples' traditional socio-cultural and belief practices? (e.g. child-rearing, health, education, arts, and governance)		**X**		
11. Will the project affect the livelihood systems of Indigenous Peoples? (e.g., food production system, natural resource management, crafts and trade, employment status)		**X**		

KEY CONCERNS (Please provide elaborations on the Remarks column)	YES	NO	NOT KNOWN	Remarks
12. Will the project be in an area (land or territory) occupied, owned, or used by Indigenous Peoples, and/or claimed as ancestral domain?		**X**		
C. Identification of Special Requirements *Will the project activities include:*				
13. Commercial development of the cultural resources and knowledge of Indigenous Peoples?		**X**		
14. Physical displacement from traditional or customary lands?		**X**		
15. Commercial development of natural resources (such as minerals, hydrocarbons, forests, water, hunting or fishing grounds) within customary lands under use that would impact the livelihoods or the cultural, ceremonial, spiritual uses that define the identity and community of Indigenous Peoples?		**X**		
16. Establishing legal recognition of rights to lands and territories that are traditionally owned or customarily used, occupied or claimed by indigenous peoples?		**X**		
17. Acquisition of lands that are traditionally owned or customarily used, occupied or claimed by indigenous peoples?		**X**		

D. Anticipated project impacts on Indigenous Peoples

Project component/ activity/ output	Anticipated positive effect	Anticipated negative effect
This subproject will improve water and infrastructure in Plaridel where there are no IPs present	None as there are no IPs present	None as there are no IPs present

APPENDIX 3
PUBLIC CONSULTATIONS PROCEEDINGS

1.) Attendance Sheets

Form no. QMS F2
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE OF PLAWD EMPLOYEES

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29, 2019 / 10:00AM**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Signature
1	Maybel M. Cruz	[signature]
2	ROBERTA M. BUENAVENTURA	[signature]
3	MARC JOHN REGIE GALICIA	[signature]
4	Harold T. Fabian	[signature]
5	Emil C. Teodoro	[signature]
6	ARNEL B. SANTOS	[signature]
7	Alvin Guevarra	[signature]
8	DENNIS D. VANTOY	[signature]
9	Manuel Boy R. Tengco	[signature]
10	Rosario Clowel	[signature]
11	BRYAN L. SERRANO	[signature]
12	Paul R. Vinluan	[signature]
13	Lorraine R. Juguilon	[signature]
14	Krizanne T. Mauricio	[signature]
15	Jujit S. Pagulayan	[signature]
16	Lizandro Santos	[signature]
17	RONALDO N. DULAON	[signature]
18	Sonny Capantas	[signature]
19	[illegible] H. [illegible]	[signature]
20	Ron Rivero	[signature]

Form no: QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_distric1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE OF PLAWD EMPLOYEES

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29, 2019 / 10:00AM**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Signature
21	EDGARDO N. DE LEON	
22	JOSELITO S. SAMSON	
23	Elias G. Vinta	
24	RICHARD B. CATUIZA	
25	WARREN MENDOZA	
26	Naimee E. Cruz	
27	C. PASAGUI	
28	ESMENALDO L. VILORIA	
29	REGIE FRANCISCO	
30	[illegible]	
31	B. Gata	
32	A. [illegible]	
33	Arturo Arroyo	
34	Nancy [illegible]	
35		
36		
37		
38		
39		
40		

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	ANTONIO MANUEL	0767 [illegible]	0961 [illegible] 950	[illegible]
2	GIGI S. SEJAFICO	[illegible]	0929-957 [illegible]	[illegible]
3	SANTY R. BERMUDA	CONCEPCION W.D	0917 143 [illegible]	[illegible]
4	GLORIA S. DUNGO	— do —		[illegible]
5	Rosalina M. [illegible]	0759 Bintog Pla. Bul.	09194090715	[illegible]
6	Maria Grace Agustin	600 Purok-6 Dampol Pla.	09173435489	[illegible]
7	Ma D. Evangelista	Bintog Plaridel, Bul		[illegible]
8	manuel G Vimol	Pasch. Pl		[illegible]
9	Rosalina T. Malabarbas	0266 Lumang Bayan		[illegible]
10	ACELA LAVIÑA	PH 2 BLK 19A LOT 7 CALIMAHAN LUMANG PLARIDEL	09167 [illegible]	[illegible]
11	Danilo Jr. R. Gatuz	Tabang, Plaridel	0909 8724 [illegible]	[illegible]
12	Ronnie B. Largado	Calumpit, Bulacan	0925301134	[illegible]
13	[illegible] G. Bernardo	San Jose Plaridel Bul.		[illegible]
14	Christy Baldonado	Bustos WD		[illegible]
15	Jefferson Garcia	Tabang Plaridel	0923-926-9[illegible]	[illegible]
16	Cielo Marie T. Mauricio	Bintog, Plaridel, Bulacan		[illegible]
17	Jerick Marcelo	Banga 2nd Pla. Bul	09[illegible]843752	[illegible]
18	Rubin A. Aguila	Concepcion Pla. Bulacan	0926 [illegible]	[illegible]
19	Nonita G. [illegible]	sto nino	0918 529937	[illegible]
20	[illegible] prado	sto nino		

Appendix 3

Form no: QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Dolores D. Angeles	LALANGAN	09420239280	[illegible]
2	Emely M. Marquez	Lumangbayan	09755922308	[illegible]
3	Florentina S. Colgado	Concepcion Tarlac	[illegible]	[illegible]
4	Carmelita A. Tavera	Looban Tabang		[illegible]
5	[illegible]	Poblacion	09164504[illegible]	[illegible]
6	HILDA A. MARCELO	POBLACION	09164195019	H. Marcelo
7	Ronib Mongfunt	Banga 1st		[illegible]
8	Jonny Mangay ayan	L. Bayan	0995 [illegible]	[illegible]
9	IBARRA P. VILLAFUERTE	STO. NINO	09358619676	[illegible]
10	EDGARDO VALENCIA	MA. LOURDES	09322101719	[illegible]
11	LINA M. LEONZON	Poblacion	795-0414	[illegible]
12	Kevin Lorenz Jimenez	Pulilan	09050436244	[illegible]
13	Phil EUSEBIO	SIPAT	09974416085	[illegible]
14	Paolo Buenaventura	Lumang bayan	0905-862-7021	[illegible]
15	SEGUNDO ANGELES	BANGA 2ND	09975009266	[illegible]
16	CONRADO DE GUZMAN	POBLACION	0922-4199095	[illegible]
17	Concepcion D. Ong	Banga I		C.D. Ong
18	Antonia C. Gatuz	Tabang		[illegible]
19	[illegible] C. MANCORO	LUMANG BAYAN	09959609470	[illegible]
20	Hilario Ribugaco	Rocka Village	09753783386	[illegible]

Appendix 3

Form no: QMS 02
March 2017
Rev. 01

PLAWD
PLARIDEL WATER DISTRICT

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Kgwd. Relmerio Ravago	Parulan	0998 2472561	
2	Ana Bayona	771 Banga Igi Pla.		
3	Fortunato Silverio	166 SIPAT	0939-6210	
4	GENARO C. YUSI	CON. TABLAC		
5	BERNIE PAMINTUAN	CON.		
6	Rosalie R. Caringal	Bintog	09171592806	
7	SALVADOR OMON	PARULAN	09993609711	
8	Eva Maicadda T. Manuel	Bintog	09278386236	
9	Jose R. Lopez	Sn Jose	[illegible]	
10	Ricardo B. Felipe	Rocka Complex	0921127[illegible]	
11	HENRY B PINGOL	6337 ROSAL ROCKA CON	0905[illegible]	
12	Epifania Perez	Dampol, Plaridel, Bulacan	09563809825	
13	JOHN PAUL CONCEPCION	Rueda, PLARIDEL, Bulacan	09361779061	
14	Jonalyn M. Lunzaga	0246 Lumang Bayan		
15	CORAZON S CUEVO	Lumangbayan	0923 143 [illegible]	
16	ORLANDO F CANDIDA	BAGONG SILANG		
17	Maria Concepcion C. Gafo	Tabang, Plaridel	09232824020	
18	BRIAN GALANG	DOÑA CRISPINA	09991785993	
19	NESTOR C. [illegible]	BUSTOS WD	0921[illegible]	
20	JOYCE CASIS	Lagundi Plr. Bul	0926 [illegible]	

Appendix 3

Form no: QMS 02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

PLARIDEL WATER DISTRICT
A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-1613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
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ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	CELSO B. BONIFACIO	TABANG, PLARIDEL		[signature]
2	JAYPEE MANUEL	AGNAYA, PLA. BUL		[signature]
3	Consepcion Cabay	Casa Vista		[signature]
4	Marita L. Torillo	Rinfog, Plaridel, Bul	09222558199	[signature]
5	[illegible] S. [illegible]	San Jose Pla, Bul		[signature]
6	Maria [illegible] [illegible]	[illegible] Vill. Tabang Plaridel		[signature]
7	ORLANDO V. [illegible]	TABANG		[signature]
8				
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Form no. QMS-02
March 2017
Rev. 01

PLARIDEL WATER DISTRICT

A.C. Reyes St., Poblacion, Plaridel, Bulacan 3004
Tel. Nos. (044) 795-0102 / 795-3613; Fax No. (044) 760-0229
Email Address: plaridel_water_district1987@yahoo.com
Website: plaridelwaterdistrict.ph

ATTENDANCE

For: **PUBLIC HEARING FOR WATER RATES ADJUSTMENT**

Date/Time: **November 29,2019 / 10:00 am**

Venue: **Bulwagan ni Santiago Apostol, St. James the Apostle Parish**

No.	Name	Address	Contact No.	Signature
1	Segundina De Guzman	Sipat III Pla Bul	09120107616	
2	Lolita de Jesus	Lumang Bayan	09519855798	
3	ROY KIM GARCIA	BARLAD 2ND PLARIDEL		
4	MYRA R. NAVARRO	STA. INES -	09239122529	
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2.) Minutes of the Meeting

Friday, 29th November 2019, 10:00 am
Bulwagang Santiago Apostol, Saint James the Apostle Parish
Poblacion, Plaridel, Bulacan

I. Present

Ms. Nancy C. Dela Cruz, Chairperson of the Board of Directors
Ms. Amira Arroyo, Board Member
Engr. Bede Gata, 6th Member of the Board of Directors
Engr. Esmeraldo L. Viloria, Interim General Manager
PLAWD Officers & Staff Members
Ms. Gigi Serafica, LWUA Representative
Observers from Calumpit, Bustos and Concepcion Water Districts
Concessionaires (see attached files)

II. Registration

The Public Hearing was called to order at 10:15 am.

III. Opening Prayer

Mr. Sonny Caparas of the Admin and Finance Division led the opening prayer.

IV. Pambansang Awit

Singing of the National Anthem with the aid of Audio media.

V. Welcome Remarks

Chairperson Nancy C. Dela Cruz opened the event with a welcoming remark. Chairperson Dela Cruz acknowledged the presence of our concessionaires, LWUA representative, the Board of Directors, and representatives from other WDs.

VI. Overview of the Water District

IGM Esmeraldo L. Viloria presented a powerpoint of an overview of the Plaridel Water District (PLAWD).

Page 1 of 8

VII. Presentation of Proposed LWUA-ADB Project

Manager Reynante Francisco of the Engineering Division presented a powerpoint of the proposed LWUA-ADB Project.

The presentation covered the following topics:

1. Common complaints to PLAWD and its causes
2. Major issues and concerns faced by PLAWD
3. Existing and proposed actions
4. Overview of the LWUA-ADB Project
    - The Project aims to provide major rehabilitation and improvement to PLAWD's water supply system
    - The loanable amount is Php301,495,284.00, payable for 18 years at 4% per annum
    - 4 production wells, treatment facilities, power back-up system
    - 2 water storage facilities with booster pumps
    - 28 km transmission and distribution pipelines
    - Lots acquisition, PLAWD office building, warehouse, motor pool, and service vehicles
5. Breakdown Cost of the Project
6. Other essential projects and programs

VIII. Proposed Water Rates

Manager Marifaye H. Ersando of the Commercial Division presented a powerpoint of the proposed water rate adjustment.

The presentation covered the following topics:

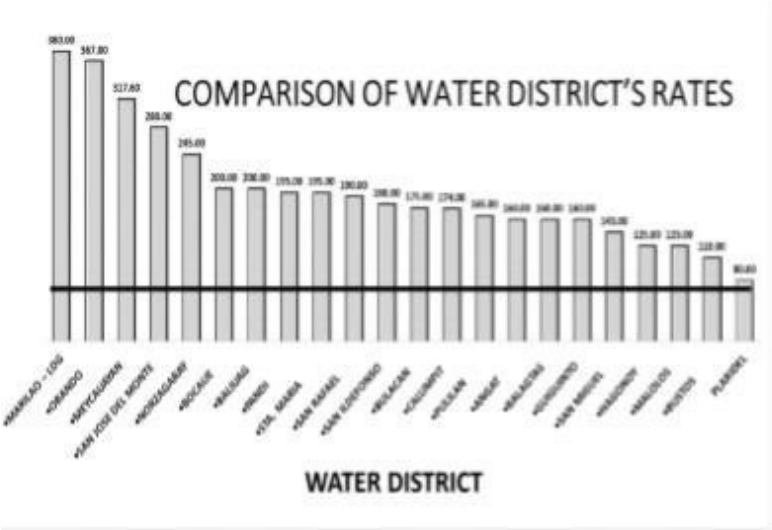
1. Existing and Proposed Water Rates Series

Existing & Proposed Water Adjustments

	Minimum Charge	11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	41-50 cu.m.	51-up cu.m.
2001	80.00	8.50	9.50	10.60	11.80	13.10
2020	124.00	13.20	14.75	16.45	18.30	20.30
2022	170.00	18.10	20.25	22.55	25.10	28.00

Page 2 of 8

2. Comparison of WDs Rates



3. Comparison of 2001 & 2019 Prices

Page 3 of 8

4. Comparison of Water Rates vs "Vices"

5. Automatic cost adjustments based on formula approved by LWUA BOT Res. No. 109 series of 2014

a. Power Cost Adjustment
This formula is applied when water is pumped using electricity.

$$PCA = \left[\left[\frac{PCa}{1+EF}\right] - PCb\right] (Ba/Bb)$$

Where:

PCA = Power-Cost Adjustment in P/cu.m.
PCa = Current Power Cost per cu.m.
PCb = Base Power Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.
EF = Escalation factor (inflation rate as provided by NEDA per LWUA BOT Res. No. 105 Series of 1998)

b. Fuel-Cost Adjustment
This formula is applied when water is pumped using fuel.

$$FCA = \left[\left[\frac{FCa}{1+EF}\right] - FCb\right] (Ba/Bb)$$

Where:

FCA = Fuel-Cost Adjustment in P/cu.m.
PCa = Current Fuel Cost per cu.m.
PCb = Base Fuel Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.
EF = Escalation factor (inflation rate as provided by NEDA per LWUA BOT Res. No. 105 Series of 1998)

Page 4 of 8

6. Water Meter Maintenance Fee

   By virtue of Board Resolution No. 81, Series of 2017, the district imposed a Php20.00 water meter maintenance fee to all concessionaires effective July 1, 2017.

IX. Open Forum

The open forum started immediately after the presentations were completed. The open forum was facilitated by Mr. Edgardo De Leon of the Commercial Division. The rules of the public hearing before questions, queries, comments, or suggestions were emphasized that those who ask questions or make comments must introduce himself/herself first by stating their name and location for proper identification.

Summary of the issues and concerns raised during the open forum are as follows:

1. Ms. Efipania Perez, Brgy. Dampol

   Q: With the current minimum rate of Php80.00, the district was able to pay its debt. Why is it still necessary to raise the rate? There is also the additional Php20.00 water meter maintenance fee, how long do we have to pay for it? With the rate increase next year, and another increase in the succeeding years, isn't it possible that the water district will become private?

   A: (IGM Viloria) The water district did not have any rate increase since 2001. With the minimum rate of Php80.00 from 2001 until 2019, what is the status of the water district? Compared to other water districts in Bulacan, the Php124.00 rate is still the lowest rate. Since 2001, commodities had gradually increased prices. With this, we can say that the rate increase is reasonable. The district may have survived with the Php80.00 rate for a long time, but the service suffered.

2. Kagawad Reimerio Ravago, Brgy. Parulan

   Q: If in case the district will not be able to survive, is there a possibility of privatization? For Engr. Reynante, there are many new installations, road diggings that are not being repaired.
   A: (IGM Viloria) With regards to privatization, privatization is not on the PLAWD's agenda. Privatization only happens if the district cannot meet the concessionaires' needs.

A: (DM Francisco) As we have seen in recent months, the work of our staff is not in line with the standards. So far, the district's program includes standardizing the work according to the DPWH's specifications. If you looked at what we did in Isabel Village, Tabang, a few months ago, the concrete we put in was not damaged. The district's program also included the repair of the previous works that have not been restored yet.

3. Antonio Manuel, Brgy. Bulihan

   Q: As mentioned, the last rate increase was in 2001, my service was connected in 2017, is it possible to adjust the implementation of the proposed rate increase on my account?

   A: (IGM Viloria) The proposed rate increase is applicable to all accounts regardless of when the service was connected.

4. Q: Is the water meter maintenance fee of Php20.00 a lifetime charge?

   A: (IGM Viloria) There is a cycle that every 5 years, the water meter will be replaced if necessary. In 2016, the collection of water meter maintenance fee was implemented to ensure that every 5 years, the water meters are calibrated to test if it is still functioning properly. According to our study, there are water meters that malfunctions after 5 years. With the water meter maintenance fee, once a water meter is found defective, it will be replaced with a new one. If the water district can absorb the fee after the water rate increase and after further study, it is possible that the water meter maintenance fee will be removed. In the meantime, the Php20.00 water maintenance fee will still be included in the water bill.

5. Ruben Maglingkod, La Mirada Subdivision

   Q: This is a rush public hearing, is this the final public hearing? According to legalization, we need to have 3 hearings. How many percents of the population in Plaridel is required before a public hearing can be conducted? Is the number of attendees sufficient to carry out the hearing?

   A: (IGM Viloria) In accordance with public hearing guidelines, we notified all concessionaires at least 15 days prior to this hearing schedule. Posters were also be posted in barangays at least 7 days before the hearing. More than 15 days before the hearing, all concessionaires were notified to attend the public hearing through their water bill. Also, our meter readers have a notification letter about the hearing that concessionaire signed after they receive their water bills. It is not required that the majority of the Plaridel's population should be present before a hearing can proceed.

There are no other scheduled public hearings. This hearing is valid for 5 years. If the water rate is not approved within 5 years, this hearing will expire.

Q: Where does Angat Dam supply their water? Why is it that water districts in Bulacan could not get water from Angat Dam? Is it not possible to ask for a water supply line from Angat Dam? How come Maynilad is able to get supply from Angat Dam?

A: (IGM Viloria) PLAWD receives a minimum contracted volume of 2 million liters of water daily from Bulacan Bulk that is connected to Angat Dam. We buy water from Bulacan Bulk at Php9.52/cu. m. despite our minimum water rate of Php8.00/cu.m. The Bulacan Bulk project started in 1992 with a signed agreement with MWSS, water districts, and other government agencies to tap to Angat Dam and supply water to Bulakeños. This project was only completed this year. Obando, Meycauayan, Bocaue, Marilao, including Plaridel Water District, are currently receiving water supply from Bulacan Bulk. The project will expand through Pulilan up to San Miguel.

6. Emily Mariano, Brgy. Lumangbayan

Q: Why is the water supply so dirty especially every morning from 4:00 am to 5:00 am? Does increasing the water rate will help get rid of dirty water?

A: (DM Francisco) PLAWD had been receiving complaints not just about dirty water but also about low pressure. According to our study, low pressure, dirty, and smelly water are caused by many factors including damaged pipelines, illegal connections, set-up of booster pumps, and lack of check valves on water meters.

7. Councilor Myra Navarro, Brgy. Sta. Ines

Q: There are many poor Plaridelians and the sudden increase in water rate is too much, can this be lowered? Wouldn't this sudden increase caused PLAWD to become Maynilad? If we do not have funds for our projects, we can seek help from the Capitol, the Governor, and even from President Duterte. It is a big problem if the funds will be taken from small citizens.

A: (Mr. De Leon, Commercial Division) PLAWD is a Government-Owned and Controlled Corporation. The Local Government and other higher Government Agencies' beneficiaries are the citizens and small projects.

A: (IGM Viloria) As mentioned and answered earlier, a water district will only be subject to privatization if the district opts for it or it does not have funds. Privatization is not on the PLAWD agenda. Low-income groups are protected because the minimum water rate should not exceed 5% of their monthly average income.

8. Kagawad Reimero Ravago, Brgy. Parulan

C: For now, let us focus on the Php124.00 first and not on the Php170.00. We are all in favor of the Php124.00 rate increase.

X. Closing

The Public Hearing adjourned at 1:23 pm.

Prepared by:

LIZANDRO SANTOS
Secretary C, Office of the BOD

Certified Correct:

ESMERALDO L. VILORIA
Interim General Manager

Page 8 of 8

APPENDIX 4
TRANSFER CERTIFICATE OF TITLE

A. Proposed Location of PLAWD Office Building in Brgy. Bintog

LOT 3074A AREA = 1000 SQ. M
LOT 1 = 86 SQ.M.
LOT 2 = 54 SQ.M.
LOT 3 = 50 SQ.M.

TRANSFER CERTIFICATE OF TITLE
Proposed Location of PLAWD Office Building in Brgy. Bintog

Judicial Form No. 140—D
(Revised January 1991)

Book T-68
Page 126

SN No. 402698

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF JUSTICE
Land Registration Authority
QUEZON CITY

REGISTRY OF DEEDS FOR THE PROVINCE OF BULACAN

Transfer Certificate of Title

No. T-14126

OWNER'S DUPLICATE CERTIFICATE

IT IS HEREBY CERTIFIED that certain land situated in the Municipality of Plaridel, Province of Bulacan, more particularly bounded and described as follows:

A parcel of land (Lot 3074-A of the subd. plan (LRC) Psd-332095, approved as a non-subd. project, being a portion of Lot 3074, Cad-335, Plaridel Cad.; LRC Rec. No. F. Patent), situated in the Bo. of Bintog I, Mun. of Plaridel, Prov. of Bulacan, Ls. of Luzon. Bounded on the NE., points 6 to 1 by Lot 3074-B of the subd. plan; on the SE., points 1 to 3 by Lot 3075; on the SW., points 3 to 4 by Lot 3076, both of Cad-335, Plaridel Cad.; on the NW., points 4 to 6 by Lot 3074-B of the subd. plan. Beginning at a point marked "1" on plan,

is registered in accordance with the provisions of section 103 of the Property Registration Decree in the name of*

THE PLARIDEL WATER DISTRICT;

subject to the provisions of the said Property Registration Decree and the Public Land Act, as well as to those of the Mining Laws, if the land is mineral, and subject, further, to such conditions contained in the original title as may be subsisting, and to

IT IS FURTHER CERTIFIED that said land was originally registered on the 20th day of October, 1977, in the year nineteen hundred and seventy-seven, in Registration Book No. RT-41, page 98, of the Office of the Register of Deeds of Bulacan, as Original Certificate of Title No. RT-6196, pursuant to a Free patent, in the name of Eleanor Ramos, granted by the President of the Philippines, on the 20th day of June, in the year nineteen hundred and seventy-seven, under Act No.

This certificate is a transfer from Transfer Certificate of Title No. RT-11545 (T-27297) which is cancelled by virtue hereof in so far as the above described land is concerned. RT-59

Entered at Guiguinto, Bulacan, Philippines, on the 28th day of August, in the year nineteen hundred and ninety-one, at 1:35 p.m.

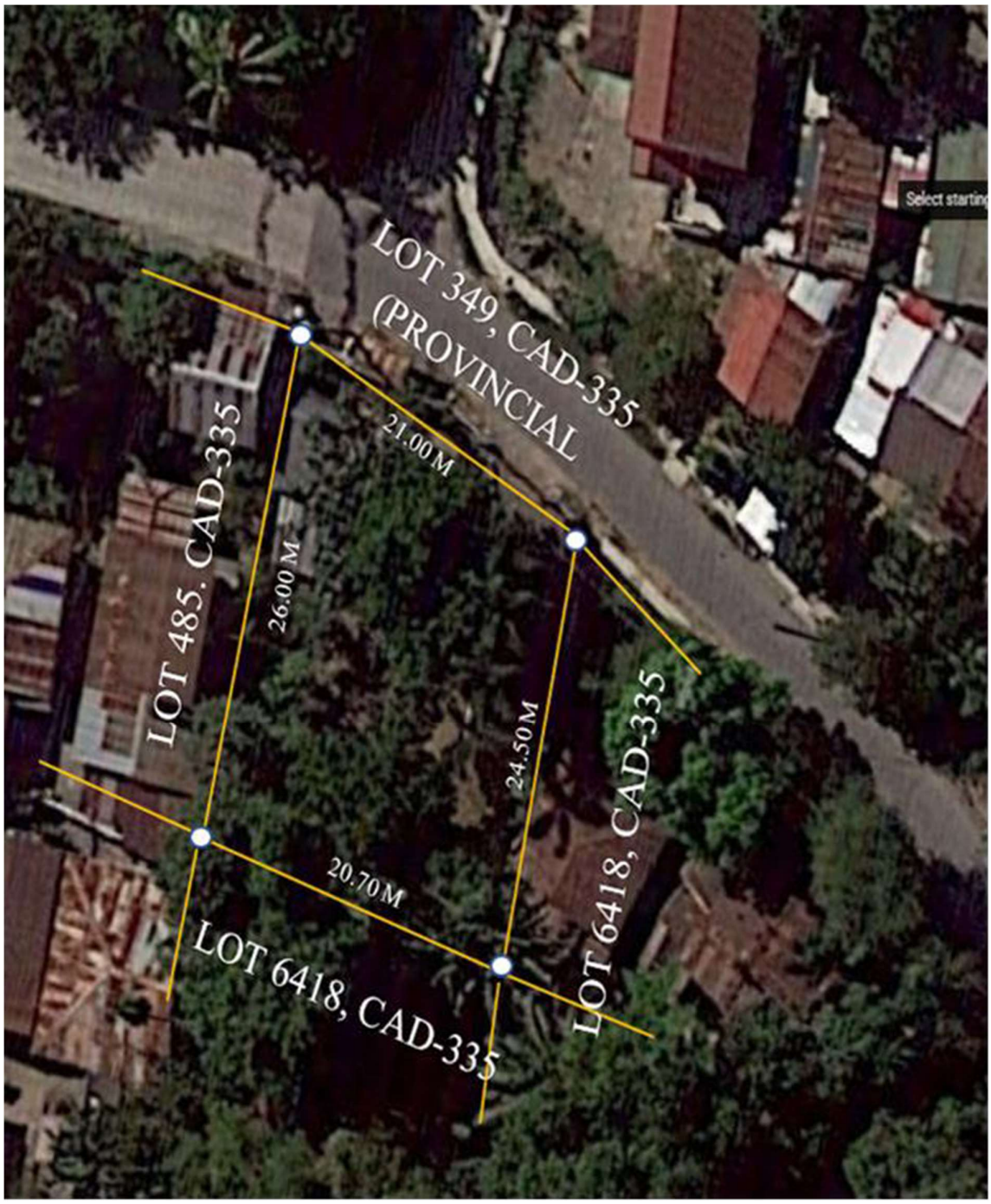
ELSA EVA E. CORPUS
(Register of Deeds)

Plaridel, Bulacan
(Owner's Postal Address)

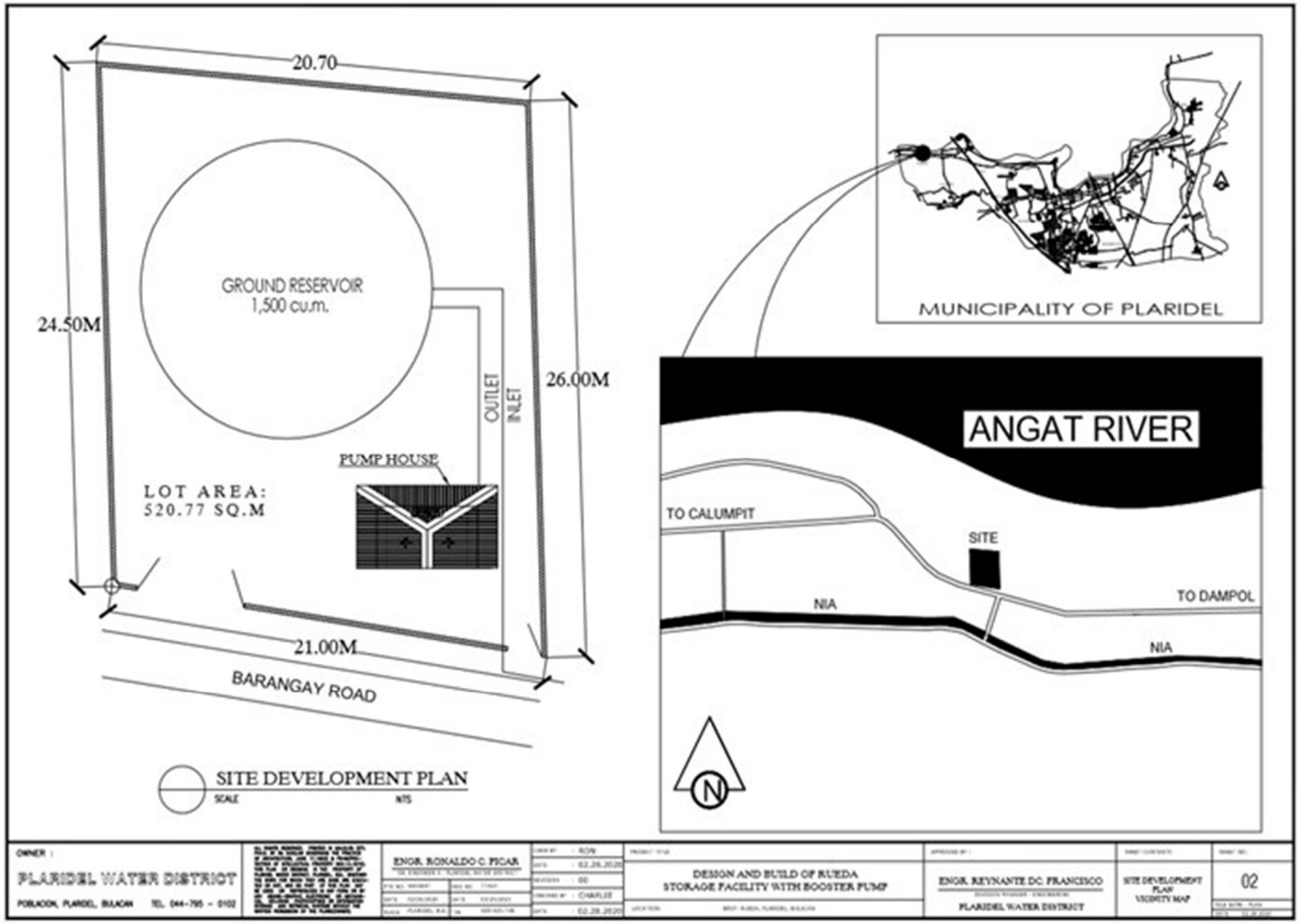
*State the civil status, name of spouse if married, age if a minor, citizenship and residence of the registered owner. If the owner is a married woman, state also the citizenship of her husband. If the land is registered in the name of the conjugal partnership, state the citizenship of both spouses.

B. Rueda Reservoir located in Barrio Dampol

LOT AREA = 500 SQ. M



SITE DEVELOPMENT PLAN
Rueda Reservoir located in Barrio Dampol



Appendix 4

TRANSFER CERTIFICATE OF TITLE
Rueda Reservoir located in Barrio Dampol

Book T-946
Page 78

Judicial Form No. 140-D
(Revised January 2000)

SN No. 1935227

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF JUSTICE
Land Registration Authority
QUEZON CITY

REGISTRY OF DEEDS FOR THE PROVINCE OF BULACAN

Transfer Certificate of Title

No. T-319078

IT IS HEREBY CERTIFIED that certain land situated in the Mun. of Plaridel Prov. of Bulacan more particularly bounded and described as follows:

A parcel of land (Lot 6418-B of the subd. plan Psd-03-133723 being a portion of lot 6418, Cad-335 Plaridel Cadastre (Lot 481-A Csd-03-004652-D) L.R.C. Rec. No.) situated in the Barrio of Dampol, Mun. of Plaridel, Prov. of Bulacan. Bounded on the NE., along line 1-2 by Lot 485; on the SW., along line 2-3 by Lot 349 (Provincial Road) both of Cad-335 Plaridel Cadastre; and on the SW., and NE., along lines 3-4-1 by Lot 6418-A of the subd. plan. Beginning at a point marked "1" on plan being N. 74 deg. 25'W., 5,207.46 m. from BLLM No. 1, Cad-335 Plaridel ...

is registered in accordance with the provisions of section 103 of the Property Registration Decree in the name of*

PLARIDEL WATER DISTRICT;-

subject to the provisions of the said Property Registration Decree and the Public Land Act, as well as to those of the Mining Laws, if the land is mineral, and subject, further, to such conditions contained in the original title as may be subsisting, and to

IT IS FURTHER CERTIFIED that said land was originally registered on the 27th day of December in the year nineteen hundred and Ninety in the Registration Book No. P-1 page 61 of the Office of the Register of Deeds of Bulacan as Original Certificate of Title No. P-061 pursuant to a Free patent, in the name of Salvador Rueda granted by the President of the Philippines, on the 22nd day of September in the year nineteen hundred and eighty-eight under Act No.

This certificate is a transfer from -O- Certificate of Title No. P-061/P-1 which is cancelled by virtue hereof in so far as the above described land is concerned.

Entered at Guiguinto, Bulacan Philippines, on the ... day of Four in the year two thousand and ... at ... m.

RAMON ... SANTANA
(Register of Deeds)

R.C. Reyes St., Poblacion, Plaridel, Bulacan
(Owner's Postal Address)

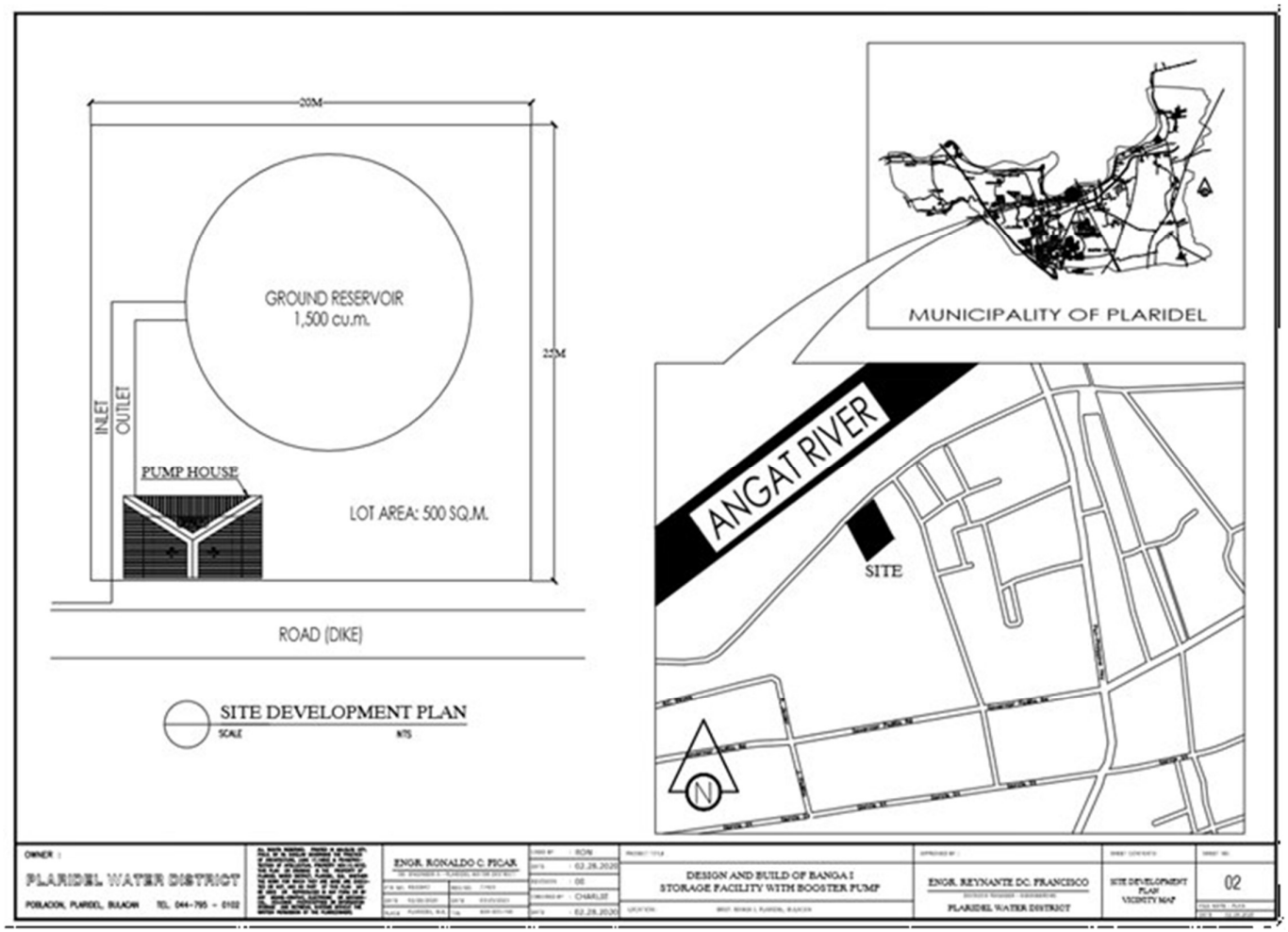
*State the civil status, name of spouse if married, age if a minor, citizenship and residence of the registered owner. If the owner is a married woman, state also the citizenship of her husband. If the land is registered in the name of the conjugal partnership, state the citizenship of both spouses.

OWNER'S DUPLICATE CERTIFICATE

C. Banga 1st Reservoir

LOT AREA = 500 SQ. M

SITE DEVELOPMENT PLAN
Banga 1st Reservoir



TRANSFER CERTIFICATE OF TITLE
Banga 1st Reservoir

Judicial Form No. 109-D
(Revised Feb 2013)

20180183105

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF JUSTICE
Land Registration Authority
QUEZON CITY
Registry of Deeds for Province of Bulacan (Guiguinto)

Transfer Certificate of Title

OWNER'S DUPLICATE · OWNER'S DUPLICATE · OWNER'S DUPLICATE · OWNER'S DUPLICATE · OWNER'S DUPLICATE

No. 039-2018000274

IT IS HEREBY CERTIFIED that certain land situated in BARRIO OF BANGA 1ST, MUN. OF PLARIDEL, PROV. OF BULACAN, ISLAND OF LUZON, bounded and described as follows:

LOT NO: 3 **PLAN NO:** (LRA) PSD-E2017005358
PORTION OF: PSU-148196
LRC RECORD NO. N-36687
LOCATION: BARRIO OF BANGA 1ST, MUN. OF PLARIDEL, PROV. OF (Continued on next page)

is registered in accordance with the provision of the Property Registration Decree in the name of

Owner: **PLARIDEL WATER DISTRICT;**
Address: A.C. REYES ST., POBLACION, PLARIDEL, BULACAN

as owner thereof in fee simple, subject to such of the encumbrances mentioned in Section 44 of said Decree as may be subsisting.

IT IS FURTHER CERTIFIED that said land was originally registered as follows:

Case No.: B-6 **Record No.:** N-36687
Orig. Reg. Date: **Decree No.:** N-134867
Original RD : PROVINCE OF BULACAN (GUIGUINTO) **OCT No.:**
Volume No.: **Page No.:**
Original Owner: SPS. ROBERTO FERNANDEZ AND ADELAIDA MENDOZA

This certificate is a transfer from TRANSFER CERTIFICATE OF TITLE 2017018131 (TOTALLY CANCELLED) by virtue hereof in so far as the above-described land is concerned.

Entered at Province of Bulacan (Guiguinto), Philippines on the 3rd day of JANUARY 2018 at 12:58pm.

ATTY. RAMON CRUZ SAMPANA
Registrar of Deeds

JAN 03 2018

Judicial Form No. 109-D
(Revised Feb 2013)

20160166361104

TCT No.: 039-2018000274

Page No.: 2

TECHNICAL DESCRIPTION *(Continued from page 1)*

BULACAN, ISLAND OF LUZON

BOUNDARIES:

LINE	DIRECTION	ADJOINING LOT(S)
1-2	NW	LOT 2 (PROTECTION DIKE & ROAD), (LRA) PSD-82017005358
2-3-4	NE, SE	LOT 4, (LRA) PSD-82017005358
4-1	SW	PROPERTY OF MARCELO LIPANA & CARLOS LIPANA

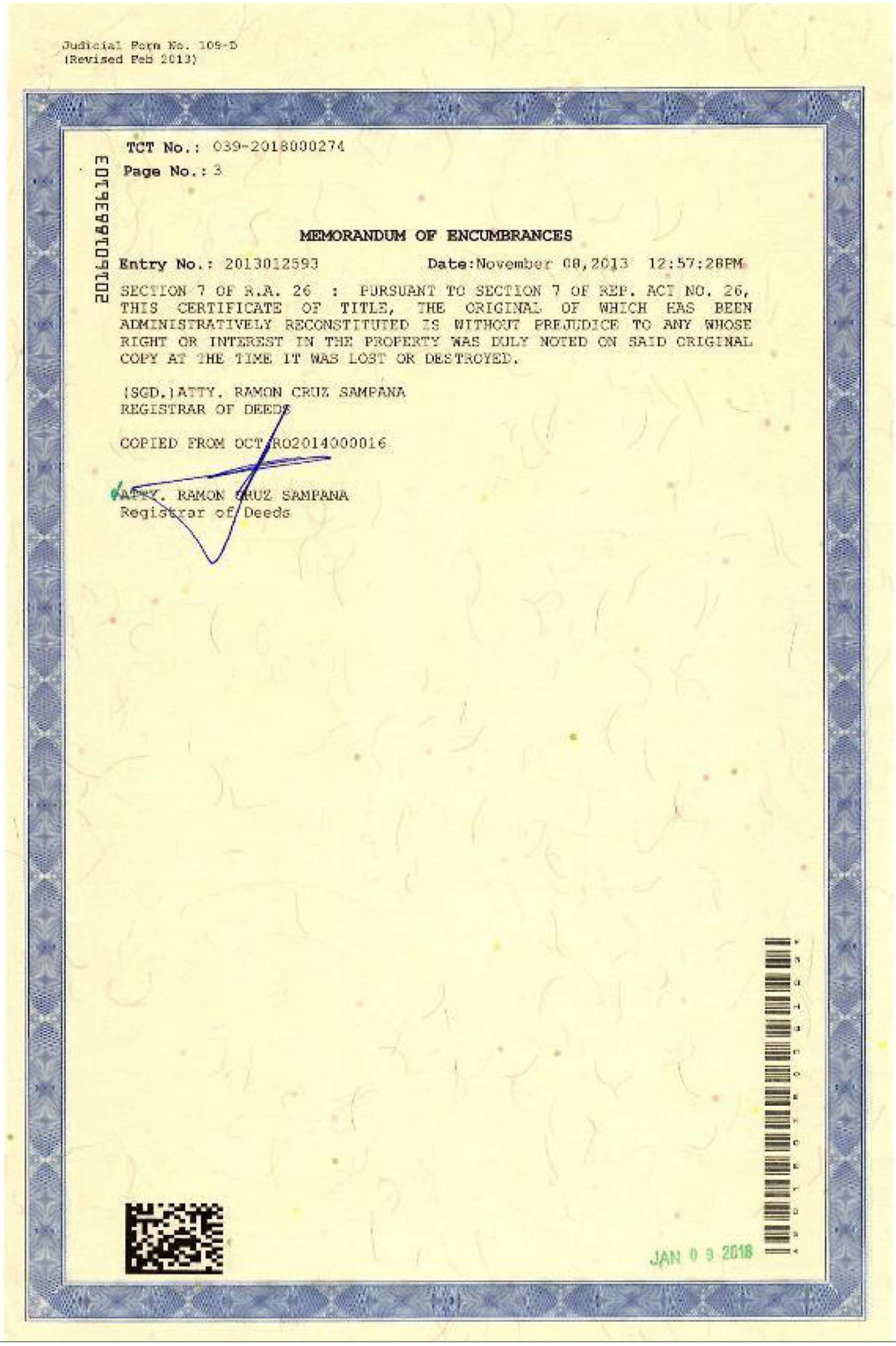
TIE POINT: BLLM NO. 1, MUNICIPALITY OF PLARIDEL, PROVINCE OF BULACAN

	LINE	BEARING	DISTANCE
TO CORNER	1	N. 59 ° 01' E	662.90 M.
	1-2	N. 50 ° 20' E	20.38 M.
	2-3	S. 28 ° 31' E	25.00 M.
	3-4	S. 50 ° 20' W	20.38 M.
	4-1	N. 28 ° 31' W	25.00 M.

AREA: FIVE HUNDRED SQUARE METERS (500), MORE OR LESS
DESCRIPTION OF CORNERS: ALL CORNERS ARE P.S. CYL. CONC. MONS. 15 X 40 CM.

BEARINGS: TRUE
DECLINATION:
DATE OF ORIGINAL SURVEY: JUNE 5, 1955
DATE OF SUBD. SURVEY: JULY 6, 2017
GEODETIC ENGINEER: RAUL A. PADIGOS
NOTES:

JAN 0 3 2018



Judicial Form No. 109-D
(Revised Feb 2013)

TCT No.: 039-2018000274
Page No.: 3

2016018436103

MEMORANDUM OF ENCUMBRANCES

Entry No.: 2013012593 Date:November 08,2013 12:57:28PM

SECTION 7 OF R.A. 26 : PURSUANT TO SECTION 7 OF REP. ACT NO. 26, THIS CERTIFICATE OF TITLE, THE ORIGINAL OF WHICH EAS BEEN ADMINISTRATIVELY RECONSTITUTED IS WITHOUT PREJUDICE TO ANY WHOSE RIGHT OR INTEREST IN THE PROPERTY WAS DULY NOTED ON SAID ORIGINAL COPY AT THE TIME IT WAS LOST OR DESTROYED.

(SGD.)ATTY. RAMON CRUZ SAMPANA
REGISTRAR OF DEEDS

COPIED FROM OCT#RO2014000016

ATTY. RAMON CRUZ SAMPANA
Registrar of Deeds

JAN 0 9 2018

ANNEX 4

Construction Guidelines for Project Implementation during the period of Public Health Emergency

Construction Guidelines for Project Implementation during the period of Public Health Emergency

Background

The President declared a state of public health emergency through Presidential Proclamation No. 922 s. 2020 to address the Corona Virus Disease (COVID-19) threat, subsequently placing the whole of Luzon under Enhanced Community Quarantine (ECQ) on 16 March 2020.

The Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF), based on its risk assessment recommended the extension of the ECQ in high risk geographic areas in Luzon and the imposition of the ECQ in some high risk areas in Visayas and Mindanao, while proposing a General Community Quarantine (GCQ) in all low risk and moderate risk areas in the country from 1 May 2020 to 15 May 2020.

Different parts of the country are expected to progress through various levels of public health emergency and declared as high, medium, or low risk areas depending on the prevalence of COVID-19 cases and related statistics, thereby placing them under corresponding community quarantine status.

The construction industry which contributes about 4.2 million workers to the country's labor force, in anticipation of the lifting of ECQ, is getting ready to return to work and would like to ensure the safety and welfare of people, most especially those of its employees/workers. Construction industry players would like to focus on preventing the occurrence of and controlling the spread of the virus in the workplace, mindful that a single case of COVID-19 can lead to an interruption, if not total work stoppage.

The global pandemic has affected livelihoods, lifestyles and industries including the construction industry which relies heavily on human resources. Total work stoppage from the time ECQ was declared has had debilitating effects not just on workers who are mostly project based and therefore paid on a daily basis but on contractors as well, majority of whom or 88% are small and medium enterprises (SMEs).

The Philippine Domestic Construction Board (PDCB), an implementing board of the Construction Industry Authority of the Philippines (CIAP), mandated to formulate policies, plans, programs, and strategies for the development of the Philippine construction industry organized a Technical Working Group (TWG) comprised of representatives from contractors of varying sizes and suppliers coming from Luzon, Visayas and Mindanao to draft the proposed protocols for the industry in preparation for resumption of construction work in areas under quarantine. The TWG drafted the "Construction Guidelines for Project Implementation during the period of Public Health Emergency" as a reference for contractors and implementing agencies, to ensure viability of projects and protection from and spread of the corona virus.

The TWG considered four (4) major components of the project cycle, namely; Materials, Manpower, Machinery and Money or the 4Ms of construction in creating the

guidelines. These were developed considering SME contractors which employ the biggest chunk of the industry's labor workforce and large contractors involved in both public and private infrastructure projects as well as vertical construction. The guidelines will give pointers in managing their human resources at this critical time but will likewise give important directions to contractors in managing their business not justfor survival but to be able to contribute to the country's economic recovery program.

The TWG is presenting options or courses of actions which contractors may consider depending on applicability to the project's unique characteristics while maintaining minimum requirements based on guidelines by government authorities such as the IATF Omnibus Guidelines for the Implementation of Community Quarantine in the Philippines, Department of Trade and Industry (DTI) and Department of Labor and Employment (DOLE) Interim Guidelines on Workplace Prevention and Control of COVID-19, and DOH Department Memorandum No. 2020-220, Interim Guidelines on the Return-to-Work.

These guidelines are subject to periodic review to better respond to developments and ensure workers health and protection as well as compliance with government regulations.

Purpose

The guidelines will set key principles and minimum requirements that define responsible, healthy and safe operations for construction related operations under COVID-19 and ensure the survival of business as well as the protection of workers.

Scope / Coverage

The guidelines will include prevention, detection, and rapid response measures designed to achieve the principles above while maintaining business continuity across the construction industry.

Policy Content / Guidelines

Materials

I. Deliveries

1. All equipment and material deliveries must be carefully planned and monitored.
2. Transition and delivery zones are identified and limited to select personnel, i.e., receivers and deliverers.
    2.1. Transition personnel are regularly monitored, always provided required Personal Protective Equipment (PPEs) and may be included for optional testing.
    2.2. Social distancing and other protocols by the Department of Health (DOH) should be followed.
3. As much as possible, cargo is unloaded only by the receivers, while the deliverers do not leave their vehicles. If the receivers are not enough to unload the cargo, the deliverers must unload while the receiver has to wait at a secured distance until completed.

4. All cargo should undergo proper disinfection procedures before use. Likewise, involved staff should also be properly disinfected before entering the jobsite.
    4.1. Materials, which are exposed to the sun, such as concrete and gravel, need not be disinfected.

Manpower

I. Awareness and Communication

1. Active communication between the workers, safety officers *(as specified under Section 14 of R.A. 11058 and its Implementing Rules and Regulations (IRR) as specified in DOLE D.O. 198 S. 2018)*, site supervisors, and management is advised in planning and implementing the protocols.
    1.1. All languages and dialects should be accounted for to ensure proper communication.
2. Infographics (may adopt DOH's), signages, and posters on health and safety measures (see Annex A) must be posted at entry points and strategic areas:
    2.1. Daily updates on the latest developments.
    2.2. Self-screening measures.
    2.3. COVID-19 Hotline.
3. As much as possible, all workers should exercise the practices for reducing the risk of transmission, and proper hygiene as identified by the DOH:
    3.1. Social distancing [at least one (1) meter distance from next person].
    3.2. Proper handwashing using anti-bacterial soap (or use alcohol-based hand sanitizer when unavailable).
    3.3. Avoid contact with own eyes, nose, and mouth.
    3.4. Prohibit spitting.
    3.5. Covering of mouth with tissue or arm (if tissue is unavailable) when sneezing or coughing.
    3.6. Use and remove PPE with care.
    3.7. Do not share personal belongings such as phones, pens, PPEs.
    3.8. Avoid physical greetings (e.g. handshakes, hugs).
4. All workers' status on-site and off-site, are properly noted at all times by the safety officers.
    4.1. Fit to work
    4.2. Sick
    4.3. High temperature
    4.4. Other conditions
5. An acceptable level of health evaluation is properly communicated between new hires and management.
6. All workers would need to provide their location or place of residence prior to working. This is to help create a proper algorithm for contact tracing.
    6.1. Additionally, workers coming from COVID-19 hotspots would need to be identified.
7. Quarantined workers should also be kept track of under strict confidentiality and privacy.

II. Clearing for Return to Work

1. Stringent qualification criteria for employees/workers:

1.1. Must be 21 to 59-year-old, without pre-existing health conditions, such as, but not limited to, immunodeficiency, comorbidities, or other health risks, including any person who resides with the aforementioned.
1.2. Employees or consultants who are 60-year-old or above may be part of the workforce for construction projects as may be allowed under General Community Quarantine (GCQ) and ECQ guidelines under Omnibus Guidelines on the Implementation of Community Quarantine in the Philippines dated 15 May 2020 which states that those aged 60 and above may be allowed to work in permitted industries and offices.
1.3. Must have no COVID 19 symptoms.

2. Screening and entry at construction site. Item 4, Section 8 of the Omnibus Guidelines on the Implementation of Community Quarantine in the Philippines, dated 15 May 2020, states that "Compliance with Joint DTI-DOLE Return-to-Work Guidelines and DOH Return-to-Work Guidelines shall be considered sufficient compliance with minimum health standards. In no case shall the testing of all returning workers be construed as a condition precedent for his/her return." The most important screening step is checking all returning workers for symptoms within the last 14 days and excluding anyone who is symptomatic. (Annex B) Contractors have the option to test workers for COVID-19 thru DOH prescribed testing protocols to determine if there isasymptomatic transmission.
   2.1. The Human Resource Department should undertake daily health pre-screening (see Annexes C & D – DOLE Work Resumption Protocol & pre-screening sample form). Returning employees/workers should be made aware of giving accurate information as specified in RA 11332.
   2.2. All returning employees/workers must declare (via SMS) any recent travel history to or residence in an area with a reported case of local transmission of COVID-19 over the 14-days prior to entry.
   2.3. Returning workers that do not show any symptoms will be quarantined for 14 days within the jobsite and will be allowed to work under a zoned or grouped area.
   2.4. Those who have been living/confined in the barracks during ECQ/GCQ period for at least 14 days and with no symptoms, will be allowed to work immediately.
   2.5. Management should have an understanding and plan on how the workers travel to and from the jobsites.
   2.6. A heightened gate entrance screening protocol (see Annex E – Sample Protocol for Screening Employees and Visitors per DTI-DOLE Interim Guidelines) with the use of non-contact thermal scanners on ALL personnel upon entry to construction premises will be implemented. He/She must declare recent possible exposure to confirmed COVID-19 cases, including travel history to or residence in an area with reported local transmission of COVID-19 disease. The individual should also attest that they are not experiencing the following symptoms: (see AnnexF – Daily COVID-19 Health Checklist Form)
      2.6.1. Fever
      2.6.2. Cough
      2.6.3. Shortness of breath
      2.6.4. Colds
      2.6.5. Sore throat

2.6.6. Runny nose
2.6.7. Nasal congestion
2.6.8. Muscle pains
2.6.9. Headache
2.6.10. Difficulty of breathing
2.6.11. Diarrhea
2.6.12. Loss of sense of smell
2.6.13. Loss of sense of taste

2.7. Security guard or assigned personnel/ safety engineers on duty will then refer these personnel to the Safety and Health Personnel, who will then conduct the DOH Decision Tool for COVID-19 Assessment.

2.8. Employers shall provide the DOLE through its Regional Office copy furnished DOH, monthly report of illness, diseases and injuries utilizing the DOLE Work Accident/Illness Report Form (WAIR) (see Annex G).

3. Suspected Cases (Possible cases of COVID-19)

3.1. Any individual exhibiting flu-like symptoms should not report to work. Instead, they should do the following:
3.1.1. Self-isolate, alert their safety officers or other applicable authorities.
3.1.2. Contract proper health authorities for additional guidance.

3.2. Employees/workers, who had the COVID-19 virus, should do the following before reporting to work:
3.2.1. Fulfill the adequate time for self-quarantining as recommended by the DOH.
3.2.2. Test negative for COVID-19.
3.2.3. Receive proper medical clearance, before reporting to work.

3.3. In the event of a worker contracting COVID-19 while working, the management should do the following:
3.3.1. Isolate the worker immediately in a separate well-ventilated holding area (or in site isolation room) in the workplace, away fromother workers.
3.3.2. Contact local government and health authorities.
3.3.3. Gather records of all people who have worked with the infected worker, who tested positive within the past four weeks.
3.3.4. Gather information on those who have been in location or shared equipment with the person.
3.3.5. Provide COVID-19 testing to all workers, who have been working closely with the infected individual.
3.3.6. Be ready to present the information to the appropriate authorities.
3.3.7. Inform the wider workforce of the situation while protecting the privacy of the individual.
3.3.8. Clean and disinfect all site surfaces and equipment.
3.3.9. Follow any additional directions from local government and health authorities.

3.4. For senior personnel, who are working in multiple jobsites, they are expected to self-quarantine for at least 14 days, if there has been a breach in one of their jobsites.

3.5. The safety officer should have a knowledge on the proximate hospitals or quarantine facilities to ensure that in the event of a COVID-19 incident, workers can be given proper healthcare.

III. Monitoring

1. Health Checks
    1.1. Regular monitoring of personnel's health, especially for COVID-19 symptoms (e.g., mandatory regular no contact temperature check).
    1.2. Day to day monitoring of personnel's health.
2. Workers Hygiene
    2.1. Constant reminder on proper coughing etiquette.
3. Limit number of Work Personnel
    3.1. Limited mobilization of personnel and minimized skeletal staff.

IV. Proper Work Attire

1. All workers must wear the prescribed clothing of the DOLE-OSHC:
    1.1. Shirt with sleeves
    1.2. Pants
    1.3. Closed-toe boots
    1.4. Hard hat
    1.5. High visibility vest
    1.6. Other necessary Personal Protective Equipment (i.e. face masks, gloves, goggles, face shields, etc.) shall be prescribed based on specific characteristics of project.
2. As per the DOH, all workers are expected to wear proper face masks.

V. Social Distancing and Precautionary Measures

1. Social distancing should be observed at the construction site and in the office:
    1.1. All workers should respect social distancing guidelines, as much as possible.
2. Provision for transport compliant with social distancing requirements.
3. Provision of On-/Near-Site accommodations/barracks, where available.
    3.1. Enough space should be provided for every employee/worker staying in the barracks to ensure that social distancing (at least 50% reduction in density of people) are adequately implemented. This can be achieved either by providing additional space/facilities or by having occupantswork (and sleep) in shifts.
    3.2. Segregate employees/workers who are coming back to work from those who originally stayed in the barracks during the ECQ period.
    3.3. Barracks should have at least one (1) meter of physical distance from each occupant and/or provision of a physical barrier in between occupants.
    3.4. Should be well ventilated / windows opened to allow fresh air circulation.
4. Provision of dedicated point-to-point shuttle service (residence-workplace-residence and compliant with social distancing).
5. Observe social distancing (e.g., no sharing of workspaces, staggered lunch breaks, use of large conference rooms only) and hygiene measures (e.g., provide hand washing and disinfection stations, mandatory use of face masks) in workplaces, shuttles and accommodations.
    5.1. Split/alternating shifts are encouraged to avoid extensive intermingling.
    5.2. Breaks should be staggered to limit the number of people in proximity with each other.

5.3. Individuals are expected to clean up their own areas after eating with proper disinfectants.
5.4. Limit the number of people operating or occupying freight elevators.
5.5. Designate smoking area:
    5.5.1. Smokers/vapers must use designated area or do so off-site and butts are to be placed in the designated receptacle. Hands must be washed before and after smoking.
    5.5.2. Stand so that smoke or vapor produced is not going into another person's breathing zone.
5.6. Site meetings:
    5.6.1. Only absolutely necessary meeting participants should attend.
    5.6.2. Attendees should be one (1) meter apart from each other.
    5.6.3. Rooms should be well ventilated / windows opened to allow fresh air circulation.
    5.6.4. Hold meetings in open areas where possible.
    5.6.5. Conduct toolbox meetings in wide open spaces to enable workers to keep the required physical distance of at least one (1) meter. (see Annex H).
    5.6.6. Meetings are to be held through teleconferencing or videoconferencing, where possible.

VI. Site Operations / Construction Work Site

1. Access and Movement to/from Construction Site
    1.1. If possible, establish one-way staircases and walkways to minimize workers' contact.
    1.2. Management can look up possible decontamination chambers (e.g. swimming pool grade-chlorine).
    1.3. All people entering and exiting the workplace should be registered, for easier contact tracing in the event of an outbreak.
    1.4. All non-essential workers are prohibited from entering the jobsite.
2. Limiting and Removing internal touch points areas.
3. Compartmentalization
    3.1. If possible, divide the construction site into zones or other methods to keep workers physically separated. This will promote social distancing and will make containment of possible outbreak easier.
        3.1.1. Limit on the number of people per zone is advised.
        3.1.2. Management can consider reducing workforce in the jobsite.
4. Construction Site Cleaning
    4.1. Regular disinfection of workplaces, shuttles, and accommodations.
    4.2. All offices and jobsites should disinfect the following at least twice per day:
        4.2.1. Door handles
        4.2.2. Railings
        4.2.3. Ladders
        4.2.4. Switches
        4.2.5. Controls
        4.2.6. Shared equipment
        4.2.7. Common and eating areas
        4.2.8. Personal workstations

4.3. Hands and common tools/equipment are cleaned or disinfected after each task.
4.4. Awareness on location of commonly used items

5. All offices and jobsites should implement additional cleaning measures of common areas as recommended by the DOH.
6. Management can look up possible decontamination chambers (e.g. chlorine, iodine, betadine, potassium persulfate).
   6.1. Demisting only decontaminates the surface, thus the need for PPEs.
   6.2. Suggested additional sanitary measures to be implemented/installed on site but are not limited to the following:
      6.2.1. Water stations
      6.2.2. Proper handwashing areas and hand washing protocol.
      6.2.3. Alcohol-based hand sanitizer shall be provided in all department areas, entrances, canteens, beside hand punch machines and other facilities.
      6.2.4. Disinfectant wiping products.
      6.2.5. Footwear disinfection treatment units (foot baths) before entering site premises or facilities (staff houses, barracks, canteens/mess halls, site offices and others).
7. Limit and remove internal touch point areas (e.g. coffee machines, water fountains, common pens). If possible, also remove doors/ door handles for jobsites.
8. A proper waste and disposal area must be provided, as well as proper disposal of contaminated products.

VII. Additional Guidelines for Vertical and Horizontal Projects

1. If possible, all construction workers are to be housed in either on-site barracks, or off-site barracks. This would make monitoring of workers' activities easier.
   1.1. All workers must use the same vehicles they came into work in, ifreturning to the off-site barracks.
   1.2. All vehicles would need to be disinfected, before being ready for use the next day.
2. Management can also look into using the floors of buildings, as barracks, with proper permission of the owners.

Machinery

1. All equipment deliveries must be carefully planned, monitored and managed to avoid the risk of COVID-19 transmission.
2. All delivered equipment must be cleaned and disinfected before use.
3. Assign regular worker to use the equipment, if possible. If sharing cannot be prevented, take precautions and follow the cleaning guide before and after each use.
4. Clean equipment before and after each day's work with a disinfectant, concentrating on points of contact such as handles.
5. If equipment needs to be transferred to other construction sites, the following action must be taken into considerations:
   5.1. Plan, monitor and manage the transfer of equipment.
   5.2. Equipment should be disinfected before transporting.

5.3. Transporting driver must be recorded including the assistant.
5.4. At the delivery site, equipment should be properly endorsed.
5.5. Once the equipment is received at the project site, number 2, 3 and 4 must be done.

Money

Contracting parties need to discuss, before resumption or start of work, contract provisions on: Payments, Variations and Timelines considering the effects of current government health and safety standards that have to be complied with to prevent the spread of the coronavirus pandemic and ensure workers' protection from the contagious disease. Contractors' concern on cash flow, price escalation, time extensions and productivity will need to be established and agreed with project owners. Contractors need to devise project implementation plan aligned with government approved health and safety protocols.

Contractors need to familiarize themselves with Republic Act (R.A.) 11469 or Bayanihan to Heal As One Act; R.A. 11058 and its IRR as specified in DOLE D.O. 198
S. 2018, and DOLE's D.O. 13 and ensure contracts are aligned with these landmark regulations. For projects with signed contracts before the onset of the coronavirus pandemic, contractors need to check on DOLE's guidelines on drafting new contracts so provisions on employment details, i.e. accommodations, meals, etc. can be included as these are expected to be heavily affected by new guidelines on health andsafety. Company code of disciplines may likewise need to be reviewed and re-written to consider pandemic guidelines and ensure employees/workers' full support and cooperation.

Pursuant to Section 21 of DOLE D.O. 198, s. 2018, *"The total cost of implementing a OSH program shall be an integral part of the operations cost. It shall be a separate pay item in construction and in all contracting or subcontracting arrangements."* to cover the cost inflected during this Public Health Emergency. These costs include, but are not limited, to testing kits; personal protective equipment; workers' barracks;quarantine facilities; isolation rooms; disinfectants; sanitation equipment and facilities; and other expenses relative to compliance with safety and health standards during construction.

Contractors should conduct periodic audits (frequency to be determined based on a project scale and scope) to verify that the appropriate measures have been implemented and are maintained.

The site supervisors and safety officers are expected to conduct daily audits, and safety reports to management in order to make sure that the appropriate measuresare implemented and followed.

Construction companies should expect to deal with heightened safety and health guidelines until such time that the pandemic has fully been eradicated, and:

1. Analyze contract requirements;
2. Comply with contractual notice requirements;
3. Adapt and Adjust schedule;
4. Coordinate and Cooperate with all participants; and

5. Document everything.

Risk Assessment and Response:

1. All contractors would need to guarantee the minimum level of standards to protect the health of the workers engaged in the construction sites.
2. Before any activity is resumed, all hazards, due to the halting of work, must be reviewed and controlled.
    2.1. Workers involved should have proper understanding of the operations and environment condition checking
3. An integrated continuity plan should also be provided in the event of a partial or complete shutdown of jobsite or if jobsite operations are severely limited.
4. All contractors should complete an integrated continuity plan to respond to partial or complete shutdown of construction sites or in the case of a severe limitation of site operations.

The COVID-19 pandemic affects working hours and earnings in all businesses, globally. However, the construction industry is unique with respect to the COVID-19 because construction contracts typically contain provisions about time for performanceand fees for failing to perform on time. There is no question that all participants in the construction industry have experienced, and will continue to experience, impacts on their operations because of COVID-19 and experts say the fallout is one more factor poised to affect construction firms. These impacts include, among others, schedule delays, workforce disruptions, equipment and supply chain disruptions, reduced productivity due to on site health and safety measures (e.g., social distancing, staggering of work, enhanced sanitary measures, etc.), permit delays or restrictions onnew permits, and financing restrictions or cash flow shortages.

Therefore, it is critical that construction companies be proactive rather than reactive in dealing with the COVID-19 and it is highly recommended that they take the following steps with respect to the coronavirus:

1. Define – identify the company's main vulnerabilities (convene a meeting with senior management and decision-makers to identify potential impacts on the company).
2. Assess – understand if and how the company is prepared to deal with the company's main vulnerabilities (review any existing plans and procedures to ensure they are current and begin preparing business continuity and crisis management plans and procedures aimed at minimizing potential impacts on the company).
3. Implement and Manage – ensure the company's plans and procedures work (work with senior management and decision-makers to establish and embed response and recovery arrangements and confirm senior management and decision-makers understand their roles and support how the plans and procedures will be used).
4. Communicate and Remain Vigilant – ensure the company's teams are informed (assign clear responsibilities for internal and external communications).

This pandemic was not foreseeable and unfortunately, its duration and fallout remain uncertain. What is certain is that the world is transitioning. Being prepared for this will be essential to managing the outcome and minimizing negative impacts.

Monitoring

DTI-CIAP is revitalizing its Joint Administrative Order No. 01, S. 2011 with DOLE, DPWH, DILG and the Professional Regulation Commission (PRC) to strengthen coordination and enhance the implementation of the Construction Guidelines on Project Implementation for the period of Public Health Emergency, DOLE D.O. 13 and R.A. 11058 and its IRR as specified in DOLE D.O. 198 S. 2018, and specifically, enforce strict monitoring of construction activities.

The DOLE shall refer to the Philippine Contractors Accreditation Board (PCAB) its findings, after due process, on any act or omission committed by construction contractors in violation of labor standards, safety rules and regulations and other pertinent policies.

Effectivity

These guidelines shall take effect after approval by the CIAP Board and posting in the official gazette (www.officialgazette.gov.ph) and CIAP website (www.ciap.dti.gov.ph).

References

1. *WHO – Getting your workplace ready for COVID-19, 19 March 2020*
2. *Philippines – Omnibus Guidelines on the Implementation of Community Quarantine in the Philippines as of 15 May 2020*
3. *Philippines – COVID-19 Protocols for Construction Sites Workers Safety and Security Version 3 by Philippine Constructors Association (PCA) as of 25 April 2020*
4. *Australia – Building and Construction Industry: Minimizing the Risk and exposure to COVID-19 as of 9 April 2020*
5. *Canada – COVID-19 – Standardized Protocols for all Canadian Construction Sites Version 4*
6. *New Zealand COVID-19: V&H Construction Protocols Version 2*
7. *New Zealand – COVID-19 Health and Safety Protocols for New Zealand Residential Construction Sites Version 3, 22 April 2020*
8. *DOH – Administrative Order No. 2020-015, "Guidelines on the Risk-Based Public Health Standards for COVID-19 Mitigation"*
9. *DOH Department Memorandum No. 2020-151, Interim Guidelines on Expanded Testing for COVID-19, reiterated under DOH D.M. No. 2020-174*
10. *DOH D.M. No. 2020-0220, s. 2020, Interim Guidelines on the Return-to-Work as of 11 May 2020*
11. *DPWH D.O. 39, S. 2020, Revised Construction Safety Guidelines for the Implementation of Infrastructure Projects during the COVID-19 Public Health Crisis, repealing D.O. No. 35, S. 2020*
12. *DTI - DOLE Interim Guidelines on Workplace Prevention and Control of COVID-19*
13. *DTI and DOLE Webinar on 8 May 2020*
14. *DOLE Labor Advisory No. 18, S. 2020, Guidelines on the Cost of COVID-19 Prevention and Control Measures, 16 May 2020*
15. *DOLE Department Order 13: Guidelines Governing Occupational Safety and Health in the Construction Industry*
16. *R.A.11058, "An Act Strengthening Compliance with Occupational Safety and Health Standards and Providing Penalties for Violations thereof" and its Implementing Rules and Regulations as specified in DOLE D.O. 198 S. 2018*
17. *DOLE-DPWH-DTI-DILG-PRC Joint Administrative Order No. 1, Series of 2011*

18. *EEI Guidelines on the COVID-19 Prevention and Control at the Workplace (Alert level code RED sub-level 2)*
19. *DMCI Work Resumption Protocols as of 22 April 2020*

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