EWSIP Source -to-Tap (STT) Profile Sheet

	STT Subproject	Bener Regional Water Supply System
1	River Basin	Serayu Bogowonto
2	Main River	Bogowonto
3	Location of Intake/Water Source	Kecamatan Bener Kabupaten Purworejo
4	Water Availability	Water availability upstream of the proposed reservoir facility is evaluated by using the Neraca Air Indonesia (2016) ¹ . 80% reliable water upstream of the catchments of the Bener Reservoir is estimated approximately 180.8 million m ³ /year.
		Average discharge is estimated 8.98 m ³ /s ² .
		A detailed analysis should be undertaken by the ESP Consultant through use of hydrologic modelling and associated hydro-meteorological, land use and land cover parameters to characterize historical conditions and future conditions via climate change.
		The main findings of a regional ADB technical assistance project in Indonesia indicate that the average precipitation is expected to change by $\pm 5\%$ by 2030, and by $\pm 10\%$ by 2050.
		There are similar findings identified by BMKG, the national agency of Indonesia for climate change studies.
		ESP consultant should evaluate site-specific conditions by using BMKG driven climate change products and associated impact on the water availability upstream of the existing/proposed storage facilities.
5	Sediment Yield	The main findings of a recent European Space Agency study, in two river basins in Indonesia ³ , indicate high level of sediment yield across the river basins. As an example, upstream of Jatigede reservoir, the high amount of sediment yield can lower the life-cycle of the reservoir by approximately 10 years.
		Sediment yield potential upstream of Jatigede Reservoir

¹ Penyusunan Peta Ketersediaan Air, Dit BPSDA, 2016

² Jaringan Pemanfaatan Air Baku Bendungan Bener, presentation by BBWS Serayu Opak, 26 Sept 2019

³ WS Cimanuk Cisanggarung and WS Jratunseluna





11	Beneficiaries	About 864,000 people of Kab Kebumen, Kab. Purworejo and DI Yogyakarta will get access to drinking water ⁴ .
12	Alignment with Spatial Plan	The alignment of the subproject with the spatial plan of Central Java and DI Yogyakarta Province shall be confirmed in coordination with the government agencies
13	Potential Environment Impact	The subproject works are not expected to cross any protected area (forest/swamp), biodiversity sanctuary or protect forest, according to Interactive Map 2019 by Ministry of Environment and Forestry.
14	Potential Involuntary Resettlement	The subproject is expected to affect agriculture/estate land, and a number of households. The main expected impact are expected along the pipe of total about 93.0 km and sites of WTP and 5 offtake reservoirs. There are no documents on land acquisition, socio-economic conditions and resettlement needs along the project corridor (i.e, LARP, LARAP, IP&IR, etc.)
15	Potential Indigenous people impact	The proposed subproject doesn't cross any IP area according to the BRWA (<i>Badan Registrasi Wilayah Adat</i> -Registration Agency of Indigenous Community Territories) map as shown below.
16	Readiness FS/ DED/IEE-EIA/ LARP/Bidding documents	There are no DED, AMDAL and LARP documents available.

 $^{^{\}rm 4}$ Demand of 120 l/capita/day and safety factor 1.25 considering NRW

17	Proposed enhancements	Enhancements to be administered through the STT framework include the following:
		a. Automatization system (SCADA system) of the water treatment process control for efficiency improvement and monitoring.
		b. Smart meter reading and smart billing system to minimize error reading hence minimize the administrative losses.
		c. Sludge management of the excess sludge from the Water Treatment Plant process through design and construction of sludge treatment plant and train the PDAM staff in sludge management and handling.
		d. Establishment of District Metered Areas (DMAs) as part of a Non- Revenue Water management system and stay equipped with calibrated telemetry water meter instruments for managing water flows and Non- Revenue Water reduction program.
		e. Development of an integrated asset management system via GIS to allow PDAM's efficient management of assets through operation and maintenance activities by including capacity building to the water utilities (PDAM) staff.
		f. Development of a real-time operation system equipped with SCADA network, integrated hydraulic model, real-time monitoring of gage network along the integrated STT system.
		g. Improvement in the technical operation and maintenance (O&M) through energy efficiency and Non-Revenue Water Management by including capacity building.
		h. Introduction of smart water technologies through use of automated and telemetry control of hydrometric equipment along the integrated STT system (reservoir, water treatment plant, pumps/valves along the water transmission/distribution network) for operational efficiency and optimization.
		i. Consideration for use of renewable energy sources along the integrated STT system including i) pumped hydropower schemes in reservoirs, ii) solar panels (green technology) at water treatment and water distribution/transmission network to produce the power for pump as Indonesia is located in tropical area (high solar radiation and renewable energy).
18	Linkages between EWSIP	The linkages between the TRTA EWSIP, Engineering Services Project (ESP), DED, and construction under EWSIP are schematized below:
	and ESP	•Outputs: (i) climate change projections, hydrodynamic modeling, satellite based land and water management information, natural based solutions, (ii) optimized WRM and enhanced FRM and STT subprojects, (iii) Pre-Feasibility reports for the FRM/STT subprojects, (iv) templates for Social and Environment Safeguards, (v) economic and financial analysis, and (vi) loan documents
		 Inputs: BWS/BBWS/CK DED and EWSIP Pre-Feasibility Reports Outputs: DED, Safeguards (Social and Environment), LARP and EFA in selected river basins
		•Inputs: ESP Design •Outputs: FRM/STT Facilities constructed in selected river basins