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PROJECTS TO MITIGATE PENANG'S ESCALATING RAW WATER RISKS

- **In November 2020, PBAPP commissioned the 3rd Penang Twin Submarine Pipelines (3rd PTSP) and in January 2021, took over the Expanded Mengkuang Dam. Nevertheless, Penang is still facing escalating raw water risks.**

PENANG, Tuesday, 22.6.2021: Perbadanan Bekalan Air Pulau Pinang Sdn Bhd (PBAPP), the main subsidiary of PBA Holdings Bhd, will continue to focus on projects to mitigate Penang's raw water risks and address its future water demand.

PBAPP took over management of the Expanded Mengkuang Dam (EMD) from the Penang State Government on 9.1.2021. As at June 2021, PBAPP may draw down 300 million litres per day (MLD) of raw water from this dam for treatment at the Sungai Dua Water Treatment Plant (WTP) during dry seasons when the river level of Sungai Muda is low.

In November 2020, PBAPP commissioned the 3rd Penang Twin Submarine Pipelines (3rd PTSP) project. With the 3rd PTSP online, PBAPP is able to pump an additional 315 MLD of treated water from the Sungai Dua WTP to Penang Island during prolonged dry seasons when the effective capacities of the Air Itam Dam and Teluk Bahang Dam are low.

PBAPP will continue to focus on mitigating Penang's raw water risk factors which have escalated in recent years. These risk factors include:

- **Upstream Developments in Ulu Muda and Sungai Muda**
Since 1973, Sungai Muda has served as Penang's one and only primary raw water resource. However, Sungai Muda may only meet Penang and Kedah's raw water needs reliably until 2025. Recent upstream developments involving the water catchment area of Ulu Muda and Sungai Muda (as announced by Kedah in 2020), are

threatening the quantity and quality of raw water that will be available to Penang from this river.

- **Climate change**

Since 2019, climate change has affected rainfall in the water catchment areas of dams in Penang and Kedah. On 1.4.2020, the capacity of the Muda Dam, which was built to release water into Sungai Muda during dry seasons, fell to a critical level of 3.81%. On 5.9.2020, the effective capacity of the Teluk Bahang Dam dropped to the lowest reported level of 16.0%. For the record, it took 15 cloud seeding operations and 2 raw water diversion projects to refill the Teluk Bahang Dam to an effective capacity of 58.7% on 1.1.2021.

- **Delay in the SPRWTS**

The Penang State Government and PBAPP mooted the idea of the Sungai Perak Raw Water Transfer Scheme (SPRWTS) to the Federal Government in 2011. The SPRWTS will reduce Penang's "over-dependency" on Sungai Muda. It may support the additional raw water needs of Penang and north Perak until 2050. This scheme has not been implemented yet.

- **Increasing water demand**

In the past 20 years, Penang's water consumption increased by 43.5%, from 589 million litres per day (MLD) in 2001 to 845 MLD in 2020. In 2020 when most businesses did not operate most of the time during Malaysia's Movement Control Orders (MCOs), Penang's overall water consumption increased by 0.55%.

In 2009, the "Masterplan Study for Potable Water Supply in Penang towards 2050" projected that Penang's water demand will reach 1,696 MLD by 2040 and 1,884 MLD by 2050. Notwithstanding the medium to long-term socioeconomic effects of the Covid-19 global pandemic, Penang will need to tap at least one more major raw water resource to minimise the risk of a water supply shortage over the next 30 years.

3 contingency projects to be implemented before 2025

With escalating raw water risks in mind, PBAPP has proposed the implementation of the following 3 initial Penang Water Supply Initiative 2050 (PWSI 2050) contingency projects:

- 1. Package 12A of the Sungai Dua Water Treatment Plant (114 million litres per day, or MLD)**
Package 12A will replace a failing Dissolved Air Flotation (DAF) module in the Sungai Dua Water Treatment Plant (WTP) which is due for decommissioning. With Package 12A in place, the Sungai Dua WTP will produce more treated water for pumping to Penang Island via the 3rd PTSP during prolonged dry seasons.

- 2. Sungai Perai Water Supply Scheme or SPWSS (136 MLD)**
PBAPP is seeking to tap Sungai Perai as an additional raw water resource for Penang. Previous water engineering studies have shown that raw water from this river may not be treated to potable water quality through conventional water treatment technology. As such, PBAPP must employ advanced technologies, such as membrane filtration, to treat water from this river for safe consumption.

- 3. Phase 1 of the Penang Desalination Water Supply Scheme or PDWSS (250 MLD)**
Phase 1 of the PDWSS proposes the construction of a sea water desalination facility on Penang Island. The main objective is to address increasing water supply needs in Balik Pulau and the southern areas of the island, as well as to cater to the water supply needs of the Penang South Reclamation (PSR) project towards 2030.

These projects will “buy time for Penang” until the implementation of the SPRWTS as a long-term raw water solution towards 2050. If the SPRWTS is further delayed beyond 2025, subsequent phases of the PDWSS may be implemented at other strategic locations to ensure water supply sufficiency for Penang.

Key factors for the implementation

Implementation of the PWSI 2050 projects is subject to approval by the Penang State Government following a review of the findings of an independent water engineering feasibility study. PBAPP will table the study to the Penang State Government soon.

With State Government approval, PBAPP must also raise sufficient funds for the PWSI 2050 projects through the implementation of new water tariffs in

Penang. PBAPP's water tariff review application was submitted in 2019 and is still pending Federal Government approval in 2021.

PBAPP does not know when its tariff review proposal will be approved or implemented. The approval, timing and implementation of new water tariffs in Penang, and in every other state in Peninsular Malaysia, falls under the purview of the Federal Government.

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