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Media Release

DATO' IR. PATHMANATHAN K.
CEO, PBAPP and PBA Holdings Bhd.

PBAPP WINS “GOLD AWARD” FOR INNOVATIVE RECYCLING PROJECT

- **“Zero Waste Recycling Project” at the Sungai Dua Water Treatment Plant recycles water treatment residue (WTR) as a green building material and constantly harvests and re-harvests “supernatant water” as a recycled raw water resource.**
- **Malaysian International Water Convention 2025 (MIWC) Gold Award under the “NextWave Innovation Awards”.**

PENANG, Friday, 17.10.2025: In February 2025, PBAPP launched a project to recycle water treatment residue (WTR) as a building material and constantly harvest “supernatant water” at the Sungai Dua Water Treatment Plant (WTP).

This project won a “gold award” in the Circular Economy & Water Reuse category, at the Malaysian International Water Convention 2025 (MIWC 2025) on 15.10.2025.

PBAPP’s “Zero Waste Recycling Project” at Penang’s largest water treatment plant represents an innovative approach to tackle the issue of safely handling WTR, which has been classified as a SW204 (a scheduled waste) by the Department of Environment (DoE) since 2009. As such, DoE has directed all Malaysian water supply operators to dispose of SW204 in “Class 4 Sanitary Landfills” (C4SLs), the nearest of which is located in Selangor.

A more environment-friendly, cost-effective and sustainable solution

In Penang, PBAPP decided to pursue a more environment-friendly, cost-effective and sustainable recycling solution – processing and recycling WTR as a raw material to make cement bricks.

The following is a brief summary of PBAPP’s “Zero Waste Recycling Project”:

1. Wet WTR from the water filtration and sedimentation processes in the Sungai Dua WTP are placed into “settling tanks” wherein the “supernatant water” (water with turbidity below 200 NTU) is “separated” from thickened WTR.

2. From the settling tanks, this first dose of “supernatant water” is discharged into the Sungai Dua WTP’s intake balancing pond as a recycled raw water resource.
3. On the other hand, the thickened WTR is pumped into the Sungai Dua Dewatering Plant (SDDP). In the SDDP, a belt filter press is used to force more supernatant water out of the WTR to form SW204 solids.
4. This second dose of supernatant water is processed in a filtrate holding tank and a filtered clarifier tank before it is pumped into settling tanks, again for use as a recycled raw water resource.

This “circular process” of constantly harvesting and re-harvesting supernatant water is repeated 24/7. In September 2025, it yielded an average of 25.4 million litres per day (MLD) of recycled water at Sungai Dua.

5. Meanwhile, the SWR204 solids are transported out of the Sungai Dua WTP to a cement brick factory in Bukit Minyak. At the factory, cement bricks are produced with a 30% material content of SWR204.

Key benefits: PBAPP’s “Zero Waste Recycling Project”

PBAPP’s “Zero Waste Recycling Project” is an **environment-friendly recycling solution** because the WTR is not wasted or dumped in a C4SL. Instead, it is recycled as a “green building material” with an economic value and the processes of recycling the WTR allows PBAPP to tap a recycled water resource for Penang.

The project is also a **cost-effective solution** that should have minimal impact on Penang water rates. Penang’s WTR recycling cost is 74% cheaper than the projected costs of transporting SW204 to the nearest C4SL in Selangor. Moreover, this is an out-sourced project and PBAPP did not incur any capital expenditure for the construction of the SDDP and the cement factory.

Finally, this is a **solution that supports sustainability** in PBAPP’s water supply operations. The cyclically harvested supernatant water may be regarded as a new recycled raw water resource to sustain good water supply services in Penang, a water stressed state with limited raw water resources. In terms of operational sustainability, the SDDP was built to process about 91,250 tons of WTR in 2025, 105,850 tons in 2026 and 112,201 tons in 2027.

It should be noted that this Penang project effectively recycles the SWR204 for safe use in compliance with the DOE’s Environmental Quality Act 1974.

Once again, Penang and PBAPP have proved that it can lead the way in terms of sustainable water supply management in Malaysia. In this case, in the form of innovative handling of WTR.

PBAPP would like to thank the Malaysian Water Association, the organisers of the MIWC 2025 for acknowledging and recognising the value of the “Zero Waste Recycling Project” with a gold award.

Thank You.

Issued by : Syarifah Nasywa bt Syed Feisal Barakbah
Corporate Communications Section
Email : comms@pba.com.my