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# Safeguarding our life source

UNIT KORPORAT
TINGKAT 13, BANGUNAN DARUL EHSAN,
NO.3, JALAN INDAH, SEKSYEN 14, 40000 SHAH ALAM
TELEFON:03-55111800 / FAX:03-55101800

WATER woes, the infamous words often used to describe Selangor seem more distant now compared to before, thanks to the state's short-term initiative, the Raw Water Security Scheme (SJAM).

The scheme was mentioned during the tabling of the 2021 Selangor Budget in October 2020, when Menteri Besar Dato' Seri Amirudin Shari outlined several measures to resolve water supply disruption issues.

Following that, in December 2020, the state administration came up with four steps under the SJAM to ensure that the people of Selangor would receive continuous water supply.

The four steps that were outlined are to introduce a pre-treatment process to improve the quality of river water; to survey and monitor water sources for early detection of pollution; to construct direct pumping infrastructure as a long-term plan to divert any polluted water; and stricter laws for offenders via the Selangor Water Management Authority (Luas) (Amendment) Enactment 2020.

In conjunction with World Water Day on March 22, *Selangor Journal* interviewed the state executive councillor for infrastructure Ir Izham Hashim to learn more about the SJAM.

## What is it?

Izham said SJAM had focused on protecting the production process at several water treatment plants (WTPs) located along two rivers — Sungai Selangor and Sungai Semenyih — after several river contamination incidents led to the temporary closure of the plants and left millions of consumers in the Klang Valley with dry taps.

"There are a lot of industries located along these two rivers, and some may intentionally or unintentionally contribute to polluting them.

"The state opined that to move these industries to another location would involve legal, economic, social and political costs," he said.

Therefore, a quick and viable solution was to develop infrastructures that could help prevent the shutdown of WTPs due to river water pollution and severe drought. So far, the state has spent nearly RM300 million on SJAM initiatives.

## New laws

On Nov 9, 2020, the amendments to the Luas Enactment 1999 were passed at the Selangor State Legislative Assembly with 11 amendments, including increasing the minimum penalty to RM200,000 and setting the maximum fine to not more than RM1 million. Also introduced was a mandatory jail term to serve as a deterrent to future polluters.

The amendments also require the polluters to pay Luas all cleanup-related costs.

The Luas Enactment 1999, which was gazetted on May 20, 1999, had never been amended since it was enforced over 20 years ago.

Izham said Section 104 of the Enactment also provides rewards and protection to whistle-blowers to encourage the public to give information on river pollution activities.

"Luas would continue to open investigation papers to collect evidence to prosecute pollution offenders in the Court of Law," he said.

## Healing rivers

Izham said a one-year pilot bio-remediation project was executed on Sungai Gong in Rawang that flows through industrial areas into Sungai Selangor, where the WTPs are located.

The project that ended late last year was conducted by Universiti Kebangsaan Malaysia (UKM) with cooperation from Nuaim Corporation (M) Sdn Bhd at the cost of RM2.497 million through a contra deal on the sale of river sand.

The Raw Water Treatment System (RWTS) process uses a combination of biological approaches via 'Aquarintin' nanotechnology, which multiplies diatom algae to naturally clean and purify water at its source. This method also increases oxygen content, removes smell, destroys oil and grease, reduces heavy metals, and rejuvenates aquatic life.

"As a result of this project, the water quality in Sungai Gong has improved from Class 3 to Class 2. Thus we are considering expanding this treatment to Sungai Sembah and Sungai Semenyih," he said.

## Special squad

Among the most visible initiatives taken under SJAM are the establishment of a 24-hour river monitoring and surveillance

**Photos from top left**

**Nuaim Corporation (M) Sdn Bhd workers prepare a biocompound to treat Sungai Gong's water in Rawang on Feb 23**

**The biocompound mixture is applied directly into the river**

**A Skuad Pantas officer takes a sniff of Sungai Gong's water to assess its quality**

**A sample of river water is tested for effluents and other forms of pollution**

**Luas officers conduct regular checks on all the hardware at the Horas 600 project in Bestari Jaya, Kuala Selangor**

**The site of the Horas 600, a project integral to Selangor's promise to supply clean water to the Klang Valley**

**Luas and Air Selangor workers monitor water levels at the Horas 600 pond from the control room**

team under Luas known as Skuad Pantas at the river basin areas of Sungai Selangor, Sungai Semenyih and Sungai Langat.

Izham said the team uses high-tech drones to monitor river basin areas, analyse water samples, and collect evidence for prosecution in court. It also uses an early odour pollution detection system or sensors using an organic carbon analyser device or the Total Organic Carbon (TOC) Analyser, to help detect early signs of pollution.

He said there are two primary uses of the unmanned aerial vehicle (UAV), first for scheduled monitoring in high-risk areas at river reserve and industrial areas, which is done every three months, and second, for when pollution is detected to assess the potential risk from the effluents in the water, especially in remote areas or during night time.

"Also, in less than four hours after receiving any reports, the squad can conduct an investigation, secure the areas and take mitigation action in any polluted sites," he said, adding that since the squad was set up, river pollution could be averted early before it reaches the WTPs.

The squad also conducts in-situ checks on water quality on rivers using the main parameters such as pH level, dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD) and ammoniacal nitrogen (AN).

## Dilute and divert

In the event of pollution, raw water from two ponds will be pumped into Sungai Selangor and Sungai Semenyih for the process of dilution and flushing of pollutants at the WTPs' intake point.

The Hybrid Off-River Augmentation System (Horas) 600 flows into Sungai Selangor while Pond C flows into Sungai Semenyih. Both would eventually supply water to the WTPs located at their respective rivers.

Izham said the appointment of a contractor for the raw water channelling project is currently underway, which would involve four work packages. He said the project is also expected to be completed by the end of 2022.

"The packages include supply, installation, testing and commissioning of the Archimedean screw pump system and

**As a result of this project, the water quality in Sungai Gong has improved from Class 3 to Class 2. Thus we are considering expanding this treatment to Sungai Sembah and Sungai Semenyih."**

Izham Hashim

at the Horas 600 ponds in Kampong Sungai Darah, Bestari Jaya, Kuala Selangor as well as the water intake of the Rantau Panjang WTP in Kuala Selangor.

"The process includes constructing river diversion at the water intakes of Sungai Selangor Phase 1, 2 and 3 WTPs in Bestari Jaya, Kuala Selangor, and the Sungai Semenyih WTP in Jenderam Hilir," he said.

## Positive outcome

As Malaysia's largest water service provider, Pengurusan Air Selangor Sdn Bhd (Air Selangor) is responsible for abstracting, treating, and distributing clean and safe water to over 8.4 million consumers in Selangor, Kuala Lumpur and Putrajaya.

"We welcome this new initiative from the Selangor government to create better synergy in mitigating any unscheduled water disruption due to water pollution in the future," said a company spokesperson.

It said SJAM acts as a preventive measure to mitigate river pollution incidents before effluents get to the intake points. This has helped Air Selangor regain control of the situation.

"We can see that recently, water pollution cases have been managed well and they lessened the impact on our operations and the need to shut down our WTPs," said the agency.

## THE RAW WATER SECURITY SCHEME (SJAM)

**outlines a list of steps to be taken as an overall solution when river pollution occurs, whether upstream or downstream.**

**The four steps are:**

**1 To make amendments to the Selangor Water Management Authority (Luas) Enactment 1999, as below:**

**1.1 Conducting a law review on Luas Enactment 1999 and Emission or Discharge of Pollutants (State of Selangor) Regulations 2012**

**1.2 Reviewing the amount of fines and compounds so that it will strike fear into offenders**

**1.3 Discharging effluents based on river capacity by applying the Total Maximum Daily Load (TMDL) in designated areas in line with Section 56 of the Luas Enactment 1999 and implementation of the Polluters Pay Principle(PPP)**

**1.4 Implementing a feasibility study on zero discharge and recycling practices on effluents for the future, in line with Section 127(m) of the Luas Enactment 1999**

**(The amendments were passed in the Selangor State Legislative Assembly on November 2020)**

**2 To conduct monitoring and surveillance by Luas through its Skuad Pantas**

**3 To implement a pilot project on biological treatment or bio-remediation for the restoration of water quality in Sungai Gong**

**4 To construct raw water pumping infrastructure at the Hybrid Off-River Augmentation System (Horas) 600 to channel water into Sungai Selangor, and at Pond C into Sungai Semenyih.**