PBA BULETIN

07/2022

Perbadanan Bekalan Air Pulau Pinang Sdn Bhd
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Memenuhi segala keperluan bekalan air anda
Meeting all your water supply needs

JUL 2022

"Updated" Administration Building, Sungai Dua Water Treatment Plant

SIDANG EDITORIAL 2022

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CONTENTS

Lessons from the 6.7.2022 Incident:

How can PBAPP mitigate the risks of another "80% water crisis"?

More than 80% of the treated water supplied in Penang daily is produced at the Sungai Dua Water Treatment Plant (WTP). The Sungai Dua WTP produces treated water by processing raw water from Sungai Muda, Penang's primary raw water resource.

At 6.00am on 6.7.2022, the turbidity of raw water from Sungai Muda reached an abnormally high level of 3,000 NTU. The most likely cause: large volumes of flood water from Baling (in Kedah) had flowed into Sungai Muda, upstream from PBAPP's Lahar Tiang Intake.

At 8.00am on 6.7.2022, PBAPP had to shut down the Sungai Dua Water Treatment Plant (Sungai Dua WTP) for 4 hours.

This plant shutdown was unavoidable. PBAPP had to prioritise public health and safety because the Sungai Dua WTP could no longer produce safe treated water using raw water with a turbidity level of more than 3,000 NTU.

The shutdown resulted in a crisis that affected water supply services for 80% of Penang's 660,000 water consumers. It took 6 days for PBAPP to "normalise" its services amidst widespread public outcry.

PBAPP apologised for the inconveniences which the people and businesses had to suffer from 6.7.2022 to 11.7.2022. That said, the following facts and factors should be noted:

- The 6.7.2022 incident was an emergency response scenario. It was not a scheduled water supply interruption that was planned, initiated or caused by PBAPP.
- There was no time to "pre-inform" water consumers in Penang. PBAPP waited for 2 hours, from 6.00am to 8.00am on 6.7.2022, for the raw water NTU level to drop to avoid a plant shutdown with huge consequences. Unfortunately, this did not happen.
- The "source" of the mishap was in Kedah, and not in Penang. There were reports of a deadly flood that claimed 3 lives in Baling on 4.7.2022.
- There were no issues with raw water turbidity at the Sungai Muda WTP on 4.7.2022 and 5.7.2022. The 3,000 NTU spike in turbidity occurred in the morning of 6.7.2022.

Three key factors exacerbated the impact of the crisis:

1. Penang is "overdependent" on Sungai Muda as its one and only primary raw water resource. Since 2011, PBAPP has pushed for the Sungai Perak Raw Water Transfer Scheme or SPRWTS. However, the Federal Government has delayed the SPRWTS for 11 years. As such, Penang has no second major river to tap whenever things go awry at Sungai Muda.

2. The Mengkuang Dam has been expanded to store up to 86.4 billion litres of raw water for use during droughts. It was called into play on 6.7.2022. However, the Federal Government has not completed Phase 2B of the Mengkuang Dam Expansion Project or MDEP. As such, PBAPP could only draw down a maximum of 300 MLD from this dam to dilute the turbidity of raw water from Sungai Muda. To achieve optimal water production capacity, the Sungai Dua Water Treatment Plant needs more than 1,000 MLD of raw water.

3. Penang's water consumption has spiked after the Covid-19 phenomenon. In 2019, before the pandemic phase, Penang's recorded water consumption was 843 million litres per day or MLD. In May 2022, it reached 945 MLD. The increase was 102 MLD, or 12.1%, in just 3 years. Water demand was so high that it took days (instead of hours) to re-pressurise 4,696 km of pipelines in Penang and refill 59 treated water reservoirs and 42 treated water towers around Penang.

Post mortem recommendations

The 6.7.2022 mishap and subsequent crisis are over. However, PBAPP has learnt important lessons that will shape its actions for the future.

As it stands in August 2022, PBAPP's short-term (12 - 24 months) post-mortem water supply engineering recommendations to mitigate the risks of recurrences include:

1. EARLY WARNING

1.1. Installation of an "early warning system" at the Lahar Tiang Intake to facilitate faster detection, emergency response and public notifications.

1.2. Implementation of social media and mass media "public service alert" communication protocols. From now on, PBAPP will post updates on its FB page and issue press releases whenever the turbidity of raw water at Lahar Tiang exceeds normal levels or if there is any other anomaly in raw water readings.

2. TURNING THE EXPANDED MENGKUANG DAM INTO A FULLY FUNCTIONAL "CONTINGENCY DAM"

2.1. **2nd raw water drawdown pipeline:**
Expediting the commissioning of Phase 2B of the Mengkuang Dam Expansion Project (MDEP) by the Federal Government to boost drawdown capacity from 300 million litres per day (MLD) to 600 MLD. This is a MDEP completion specification that the Federal Government has to adhere to.

2.2. **3rd raw water drawdown pipeline:**
Seeking Penang State Government funding and approval for a third (additional) raw water pipeline from the dam to the Sungai Dua Canal. The objective is to further increase the dam drawdown capacity from 600 MLD (after Phase 2B of the MDEP) to 1,000 MLD. As and when PBAPP is able to draw down 1,000 MLD from the Mengkuang Dam, Penang's risks of facing a "80% water crisis" whenever there is a mishap involving Sungai Muda will be significantly mitigated.

2.3. **440 MLD Lahar Yooi Pumping Station:**
For the Mengkuang Dam to serve Penang as a fully functional contingency dam, its effective capacity of 86.4 billion litres must be replenished consistently and quickly during wet seasons. As such, the Federal Government must complete and commission the 440MLD Lahar Yooi Pumping Station, as specified in Phase 2C of the MDEP.

Looking ahead, the medium- and long-term (2025 – 2030) recommendations are:

3. TAPPING ADDITIONAL RAW WATER RESOURCES

3.1. **SUNGAI PERAI:**
It is planned to be utilised for the Sungai Perai Water Supply Scheme in 2028.

3.2. **SUNGAI KERIAN:**
An under-utilised raw water resource at the border of Penang and Perak.

3.3. **SUNGAI PERAK:**
This proposed inter-state project has been delayed for 11 years without effective intervention by the Federal Government. The time has come to set a rational "cut-off" deadline so that PBAPP may implement alternative solutions if it does not take off.

3.4. **STRATEGIC DESALINATION PLANTS:**
PBAPP is compelled to "move forward" its desalination plans in Penang because water demand has surged after the Covid-19 pandemic. The initial locations for Penang's desalination plants should be new population growth areas and industrial parks. While desalination costs will be high (resulting in significantly higher water tariffs), Penang has access to plenty of seawater even during dry seasons when there is no rain and rivers levels plummet.

In summary, the July 2022 "80% water supply crisis" is a "wake-up" call.

Clearly, PBAPP must work harder (and faster) to mitigate Penang's high water risks. However, PBAPP is a licensed water supply operator with no governmental or regulatory powers.

PBAPP may recommend rational solutions to mitigate Penang's high water risks. However, implementation of the solutions requires strong support from Penang's people and businesses, alongside firm commitments from the Penang State Government and the Federal Government.

Thank You.

Dato' Seri Ir. Jaseni Maidinsa
CEO, PBA Holdings Bhd and PBAPP
15.8.2022.

"UPDATED" ADMINISTRATION CENTRE SUNGAI DUA WATER TREATMENT PLANT

10 June 2022

The updated administration centre in PBAPP's Sungai Dua Water Treatment Plant in Seberang Perai Utara (SPU) was officially opened by Penang Chief Minister YAB Tuan Chow Kon Yeow on 10 June 2022.

Work to update this administration centre began in October 2019 and was completed in October 2020. The cost of this project was RM2.73 million and was designed by award-wining architect BEU Tan Architect.

The new facade of the administration plant now projects a more "green" features and environment-friendly image. In fact, this "green" image is not only for show. It is backed up by real-world benefits.

GREEN EXCELLENCE DESIGN FEATURES

- **Interiors Natural Lighting**
  Existing water tank structure adapted into Office Space instead of building new.
- **Adaptive Re-use**
  Existing water tank structure adapted into Office Space instead of building new.
- **Facade As Shading Screening**
  Glare Control and shading device to reduce heat gain to interior space
- **Water Saving Devices**
  Sanitary Fittings of sink taps and WC with water saving features.
- **Inclusive Design**
  Low-electricity consumption lift system installed for inclusive design for all visitors
- **Visual Connectivity**
  Office Spaces were renovated with large windows to allow visual sights overlooking the Water Treatment Plant.
- **Flexibility in Space Sharing**
  Open concept of office space included pockets of discussion desks to optimize meetings and discussions.
- **Natural Ventilation**
  Common areas such as Arrival Lobby, Corridors, Pantry and Lift Lobby were deliberately designed as Natural Ventilated space to reduce energy consumption.

CM VISITS SITE FOR PACKAGE 12A, SUNGAI DUA WATER TREATMENT PLANT

10 June 2022

Perbadanan Bekalan Air Pulau Pinang Sdn Bhd (PBAPP) is expediting the implementation of 2 urgent projects to increase the capacity of the Sungai Dua Water Treatment Plant (Sungai Dua WTP):

1. Phase 2 Sedimentation Tanks Upgrade Project: This project began in October 2020. It involves the upgrading of 6 existing sedimentation tanks in stages.

   The level of completion is at 67%, with 4 upgraded tanks now functioning optimally. When all the 6 upgraded tanks are fully operational in October 2022, the water treatment output of the Sungai Dua WTP will increase by another 30 million litres per day (MLD).

2. Package 12A, Sungai Dua WTP: Development of Package 12A is being expedited. Work has commenced from March 2022.

   Package 12A involves the construction of a new and additional water treatment module in the Sungai Dua WTP. When commissioned in December 2023, it will increase the maximum design capacity of the Sungai Dua WTP by 114 million litres per day (MLD).

   In total, full commissioning of these 2 projects will increase 144 MLD to this plant's output by December 2023.

   When Package 12A is commissioned in 2023, the Sungai Dua WTP's maximum design capacity would reach 1,342MLD; of which up to 1,025 MLD would be delivered to consumer's taps (minus 23.6% NRW).

   PBAPP is working hard to fully commission the Phase 2 Sedimentation Tanks Upgrade Project and Package 12A to prevent widespread water supply interruptions caused by escalating water demand in Penang.

MENANGANI LONJAKAN PERMINTAAN AIR PULAU PINANG

Penggunaan air domestik di Pulau Pinang telah meningkat sebanyak 70 JLH (14.0%), dari tahun 2019 ke Mei, 2022.

Dalam jangka masa 9 tahun sebelumnya (2010 – 2019), jumlah penggunaan air yang direkodkan di Pulau Pinang meningkat sebanyak 61 JLH (7.8%), daripada 782 JLH pada 2010 kepada 843 JLH pada 2019.

Bagaimanapun, dalam tempoh 3 tahun lalu, jumlah penggunaan air di Pulau Pinang meningkat sebanyak 102 JLH (12.1%), daripada 843 JLH pada 2019 kepada 945 JLH pada Mei 2022.

(Sila rujuk Lampiran A: "Jumlah Penggunaan Air di Pulau Pinang, 2010 – Mei 2022.")

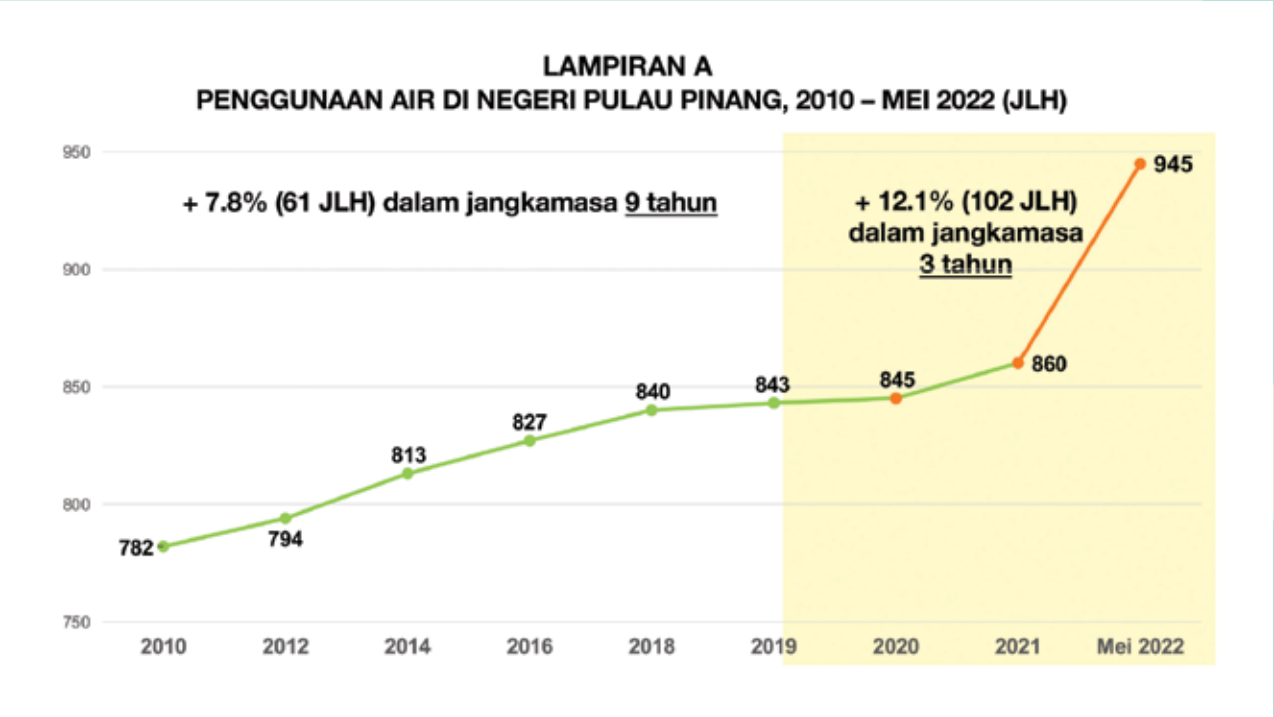
Seperti yang dijangkakan, semasa 2 tahun pandemik Covid-19 pada 2020 dan 2021, penggunaan air perdagangan (perniagaan) menurun sebanyak 30 JLH (8.7%), daripada 343 JLH pada 2019 kepada 313 JLH pada 2020 dan 2021. Sejak Malaysia memasuki fasa endemik, penggunaan perdagangan kembali meningkat dan mencecah 375 JLH pada Mei 2022.

Sebaliknya, penggunaan air domestik meningkat sebanyak 47 JLH (9.4%) semasa tahun pandemik, daripada 500 JLH pada 2019 kepada 547 JLH pada 2021. Pada bulan Mei 2022, ia mencecah paras tertinggi sepanjang masa sebanyak 570 JLH.

Di Pulau Pinang, pandemik Covid-19 telah mengubah pandangan bekalan air ke arah 2030; dan kesannya akan turut dirasai untuk tahun-tahun akan datang.

Peningkatan 12.1% dalam penggunaan air Pulau Pinang sejak 3 tahun lalu adalah luar biasa. Penggunaan air telah meningkat sebanyak 7.8% sahaja dalam tempoh 2010 – 2019.

Dalam perancangan ke hadapan, kita kini mesti merancang agar peningkatan purata sebanyak 4.03% dalam penggunaan air setahun dapat ditampung.



MESYUARAT AGONG TAHUNAN PBAHB 2022 MASIH SECARA MAYA

20 Jun 2022

Untuk kali kedua, Mesyuarat Agong Tahunan (AGM) PBAHB diadakan secara maya sepenuhnya pada 20 Jun 2022 lalu. AGM kali ke-22 ini dipengerusikan oleh Pengerusi PBAHB, merangkap Ketua Menteri Pulau Pinang, YAB Tuan Chow Kon Yeow dan disertai oleh Ahli-ahli Lembaga Pengarah yang lain.

Seramai 54 pemegang saham dan pemegang proksi mendaftar dan menyertai AGM pada kali ini.

YAB Pengerusi memaklumkan bahawa sebagai sebahagian daripada inisiatif dan langkah keselamatan untuk membendung penularan COVID-19, dan mengambil kira kesejahteraan dan keselamatan para pemegang saham, AGM ke-22 telah dijalankan secara maya melalui siaran web strim langsung dan pengundian jarak jauh dalam talian menggunakan penyertaan jarak jauh dan kemudahan pengundian tanpa sebarang kehadiran fizikal oleh pemegang saham dan proksi.

Pada AGM secara maya berkenaan, dividen akhir satu peringkat sebanyak 1 sen sesaham telah diluluskan untuk 7,942 pemegang saham. Ia membabitkan keseluruhan pembayaran berjumlah RM3.31 juta. Tahun 2022 menandakan tahun ke-21 berturut-turut PBAHB membayar dividen. PBAHB telah membayar dividen setiap tahun sejak tahun 2002.

PBAHB mencatatkan keuntungan selepas cukai (PAT) sebanyak RM36.74 juta bagi tahun kewangan 2021. Kenaikan PAT berjumlah RM11.98 juta, atau 48.4%, tahun ke tahun. Bagi tahun kewangan 2020, PBAHB telah melaporkan PAT sebanyak RM24.76 juta.

PAT lebih tinggi yang direkodkan pada 2021 adalah disebabkan terutamanya oleh faedah cukai tertunda kira-kira RM9.0 juta yang diperoleh Perbadanan Bekalan Air Pulau Pinang Sdn Bhd (PBAPP) yang berkaitan dengan penggunaan “elaun pelaburan semula” (RA) yang tidak diserap sebanyak kira-kira RM78.0 juta pada tahun 2021, berbanding kira-kira RM12.0 juta pada tahun 2020.

PBAR PULAU PINANG MENERUSKAN SOKONGAN KEPADA LATIHAN INDUSTRI BEKALAN AIR DI MELAKA

30 Mei 2022

PBA Resources Sdn Bhd (PBAR), anak syarikat PBA Holdings Bhd (PBAHB), menandatangani Memorandum Persefahaman (MoU) dengan MWI di Melaka pada 30.5.2022. Skop perjanjian meliputi syarat-syarat berikut:

- PBAR dilantik sebagai penasihat atau perunding untuk membantu MWI mendapatkan pengiktirafan JPK (Jabatan Pembangunan Kemahiran, Kementerian Sumber Manusia) sebagai pusat bertauliah untuk program latihan industri bekalan air;
- PBAR dilantik sebagai penasihat dalam perkara yang berkaitan dengan mendapatkan pensijilan, pembaharuan akreditasi dan penambahan program latihan;
- MWI akan menggunakan modul latihan yang diiktiraf JPK daripada PWSA (Akademi Perkhidmatan Air Pulau Pinang); dan

Tempoh MoU ditetapkan selama 3 tahun, bermula 30.5.2022.

MoU dengan MWI ini memperbaharui komitmen PBAPP untuk menyokong program latihan industri bekalan air peringkat SKM di Melaka.

Dengan mempromosikan latihan kompetensi yang meluas melalui PBAR dan PWSA, Kumpulan PBA berusaha untuk menyediakan lebih ramai anak muda Malaysia untuk kerjaya dalam industri bekalan air masa depan sekaligus meningkatkan status kecekapan kakitangan industri air sedia ada di seluruh Malaysia.

AWARD-WINNING PBAPP CENTRAL LABORATORY

The PBAPP Central Laboratory was established in 2008 and is accredited to MS ISO/IEC 17025. This accreditation is awarded to laboratories that has achieved competency in the practice of analytical work. With the accreditation, the PBAPP Central Laboratory is deemed technically competent for the analysis of water.

PBAPP's Central Laboratory and the Penang State Health Department, under the MOH, jointly sample and test treated water regularly in accordance to the National Drinking Water Quality Surveillance programme (NDWQS).

With a team of 12 personnel led by 2 chemists, this laboratory has won 5 consecutive "IKM Excellence Awards" from the Malaysian Institute of Chemistry (IKM), in the period 2017 – 2021.

Its state-of-the-art instrumentation include:

- An inductively-coupled plasma optical emission spectrometer (ICPOES);
- An ultraviolet-visible (UV-VIS) spectrophotometer; and
- A total organic carbon (TOC) analyser.

The PBAPP Central Laboratory is seeking to venture beyond testing Penang treated water. It has the "capacity", expertise, and instrumentation to provide advanced water testing services to other industries.

MAJLIS MENANDATANGANI PERJANJIAN KOLEKTIF 2021 – 2023

12 Julai 2022

Majlis Menandatangani Perjanjian Kolektif (CA) di antara Perbadanan Bekalan Air Pulau Pinang Sdn Bhd (PBAPP) dengan Kesatuan Eksekutif, Kesatuan Kakitangan PBAPP dan Kesatuan Pekerja-pekerja PBAPP telah diadakan pada 12 Julai 2022 lalu di Hotel Jen.

Perjanjian Kolektif ke-8 untuk Kesatuan Kakitangan dan Kesatuan Pekerja PBAPP, manakala Perjanjian Kolektif kali pertama untuk Kesatuan Eksekutif PBAPP berkuatkuasa mulai 1 Januari 2021 hingga 31 Disember 2023.

YAB Tuan Chow Kon Yeow, Ketua Menteri, selaku Pengerusi Kumpulan Syarikat PBAHB hadir menyaksikan majlis menandatangani CA kali ini.

Ketua Pegawai Eksekutif, Dato' Seri Ir. Jaseni Maidinsa dan Ketua Divisyen Sumber Manusia, Encik Mohamed Zulkifli Abdul Hamid menandatangani bagi pihak PBAPP manakala Encik P. Naresh, Yang Dipertua Kesatuan Eksekutif PBAPP mewakili kesatuan itu untuk CA kali pertama mereka. Kesatuan Kakitangan PBAPP diwakili Yang Dipertuanya, Encik Dasir Aznan dan Kesatuan Pekerja-pekerja PBAPP pula diwakili Yang Dipertuanya, Encik Mohd. Adlin bin Ali. Ketiga-tiga kesatuan turut disertai oleh Setiausaha masing-masing.

Sebelum mencapai kata sepakat, rundingan tawar menawar telah bermula sejak bulan Februari 2021 dan berakhir pada 14 Jun 2022 dan merupakan satu proses yang agak mencabar pada era pandemik COVID-19. Beberapa artikel telah dibawa ke pihak Lembaga Pengarah untuk kelulusan. Bagi Kesatuan Eksekutif kesemua 67 artikel di dalam Perjanjian Kolektif pertama ini telah dirundingkan. Manakala bagi Kesatuan Kakitangan dan Kesatuan Pekerja-Pekerja PBAPP pula kesemua 80 artikel telah dirundingkan.

Dalam perjanjian kali ini, ahli-ahli kesatuan akan memperolehi faedah baru iaitu Perlindungan Insuran Nyawa Berkelompok (Group Term Life) sebanyak RM100,000.00. Faedah Perlindungan Insuran Nyawa Berkelompok (GTL) sebelum ini hanya diberikan kepada kakitangan eksekutif sahaja. Selain itu, untuk Perjanjian Kolektif pada kali ini juga pihak Lembaga Pengarah telah meluluskan Pelarasan Gaji sebanyak 5% kepada semua kakitangan Syarikat yang berkuatkuasa 1 Januari 2021 dan ia dibayar bersama gaji bulan Julai 2022.

PBAPP sentiasa berusaha memastikan kebajikan serta manfaat pekerja sentiasa dititik-beratkan. Syabas...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YAB TUAN CHOW KON YEOW
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Hotel Jen, 12 Julai 2022
HOTEL JEN


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YAB TUAN CHOW KON YEOW


PBA
PERJANJIAN KOLEKTIF 2021-2023

WATERFALL WATER TREATMENT PLANT

Serving Penang since 1805

In 1805, the British colonial administration commissioned the first simple water supply and distribution system on Penang Island (then known as the “Prince of Wales Island”) to cater to the needs of a population of 10,000 people.

The current Waterfall Water Treatment Plant (WTP) was commissioned in 1951. Sited on a refreshing hillside environment 70.88 metres above sea level, this plant delivers treated water via gravity flow.

Some original mechanical systems have since been upgraded with more precise modern equipment. Nevertheless, the key structure of the plant, including its fundamental treatment components, have been largely preserved.

Managed by PBAPP, this heritage water supply installation continues to serve Penang today.

1	Year of commissioning	1805
2	Raw water resources	Waterfall and Highland catchments (Sungai Air Terjun)
3	Maximum treatment capacity	8.2 million litres per day
4	Treated water reservoir	22.0 million litres
5	Principal supply areas	Waterfall Gardens, Western Road, Jesselton Road, Brown Road, Upper Macalister Road, the Penang General Hospital & the Yang Dipertua Negeri’s Residence.

AIR ITAM WATER TREATMENT PLANT

Serving Penang since 1914

The Air Itam Reservoir has been serving the water supply needs of the community in Air Itam for more than 100 years, since 1914. In 1934, a rapid sand filtration plant was added at its location.

The present Air Itam Water Treatment Plant, replete with modern conventional water treatment tanks, pump houses and other essential works, was commissioned in 1963.

Managed by PBAPP, the Air Itam Water Treatment Plant is a heritage water supply installation that continues to fulfill its primary purpose efficiently today

Key Data / Statistics

1	Year of commissioning	1934 (original), 1963 (new)
2	Raw water resources	Air Itam Dam, Tat's Stream & Mains Stream Intakes (Sungai Air Putih, Sungai Air Itam)
3	Maximum treatment capacity	73.0 million litres per day
4	Treated water reservoir	18.86 million litres
5	Principal supply areas	Air Itam

GUILLEMARD RESERVOIR

Serving Penang since 1929

The picturesque Guillemard Reservoir was built in 1929 by J.D. Fettes and named in honour of Sir Laurence Nunns Guillemard (Governor of the Straits Settlements 1920-27) and Lady Guillemard.

Located 75m above sea level on a tranquil hillock, the reservoir has a unique “figure 8” shape and is commonly known locally as the “twin reservoirs” or the “spectacles reservoir.”

Originally, the primary purpose of the reservoir was to extend water supply into nearby areas by storing treated water from the Guillemard Water Treatment Plant.

From 2000, the reservoir also stores treated water from the Batu Ferringhi Water Treatment Plant.

Managed by PBAPP, this heritage water supply installation continues to serve Penang today.

Key Data / Statistics

1	Year of commissioning	1929
2	Maximum capacity	34.45 million litres
3	Maximum depth	7.47 meters
4	Treated water source	Guillemard water treatment plant Batu Ferringhi water treatment plant (from 2000)
5	Service areas	Tanjung Bungah, Tanjung Tokong, Mount Erskine & Pulau Tikus

BATU FERRINGHI AQUEDUCT

Serving Penang since 1929

Watch video.

In 1929, the Batu Ferringhi Aquduct was commissioned on the north side of Penang Island to tap new water sources from the hills surrounding Batu Ferringhi.

Today, the Batu Ferringhi Aqueduct channels water from 5 intakes in the Batu Ferringhi water catchment area. Around 1,197 hectares of surrounding forest lands are protected as water catchment areas.

This remarkable 6.03 km Aqueduct has a maximum elevation of 111.3 meters above sea level and channels raw water to the Guillemard Water Treatment Plant by gravity flow, without any pumping process.

The treated water from the Guillemard Water Treatment Plant is supplied to consumers in Tanjung Bungah, Tanjung Tokong, Mount Erskine and Pulau Tikus.

Managed by PBAPP, the Batu Ferringhi Aqueduct is a heritage water supply installation that continues to serve Penang today.

Key Data / Statistics

1	Year of commissioning	1929
2	Raw water resources	5 Intakes at the Batu Ferringhi Water Catchment Area
3	Total Length	6.03 km
4	Maximum elevation	111.3 meters above sea level
5	Raw water channeled to	Guillemard Water Treatment Plant

There are 62.9 sq. km of protected water catchment areas in Penang.

These are the precious wild places that collect rain water for us.

Kindly respect the environment and the wildlife whenever you visit our dams and water catchment areas in Penang.

More info: www.pba.com.my

Scan for videos.