Performance Report
For 2015
Vision
To be the leading water operator in the region
Mission
To deliver the best possible experience to our customers
<table>
<thead>
<tr>
<th>Content</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Executive Summary</td>
<td>1</td>
</tr>
<tr>
<td>2 Overview of Water Services Industry</td>
<td>2</td>
</tr>
<tr>
<td>3 Water Treatment Processes</td>
<td>3</td>
</tr>
<tr>
<td>4 Holistic Water Services Provider</td>
<td>4</td>
</tr>
<tr>
<td>5 Location of Dam, Water Treatment Plant &amp; Main Trunk (Selangor, Federal Territory of Kuala Lumpur &amp; Putrajaya)</td>
<td>5</td>
</tr>
<tr>
<td>6 Where is Your Money Spent?</td>
<td>6</td>
</tr>
<tr>
<td>7 Where Do We Invest Your Money? Cost of Treated Water</td>
<td>7</td>
</tr>
<tr>
<td>8 How Do Water Meters Work?</td>
<td>8</td>
</tr>
<tr>
<td>9 Pipe Material</td>
<td>9</td>
</tr>
<tr>
<td>10 How Water Reaches Your Premises</td>
<td>10</td>
</tr>
<tr>
<td>11 Water Theft</td>
<td>11</td>
</tr>
<tr>
<td>12 Water Losses? We Lose Water in a Number of Ways</td>
<td>12</td>
</tr>
<tr>
<td>13 Water Meter Replacement</td>
<td>13</td>
</tr>
<tr>
<td>14 Leaking Pipes</td>
<td>14</td>
</tr>
<tr>
<td>15 Water Pipes</td>
<td>15</td>
</tr>
<tr>
<td>16 Our Customer Relationship Services</td>
<td>16</td>
</tr>
<tr>
<td>17 Our Medium of Communications in 2015</td>
<td>17</td>
</tr>
<tr>
<td>18 Complaints</td>
<td>18</td>
</tr>
<tr>
<td>19 Water Quality</td>
<td>19</td>
</tr>
<tr>
<td>20 Migration</td>
<td>20</td>
</tr>
<tr>
<td>21 Billing &amp; Collection</td>
<td>21</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

I am pleased to present Pengurusan Air Selangor Sdn Bhd’s (Air Selangor) first Performance Report for the activities from 2011 to 2015. The report sets out the services provided by our subsidiary companies, namely Syarikat Bekalan Air Selangor Sdn Bhd (SYABAS), PNSB Water Sdn Bhd (previously Puncak Niaga Sdn Bhd), Konsortium ABASS Sdn Bhd (ABASS) and Konsortium Air Selangor Sdn Bhd (KASB); to our customers over the past five years.

Our activities are driven by our ongoing commitment to provide value for money water services to customers. We recognise that we need to continuously improve to ensure that our customers receive excellent services. However, we know there is more we can do and everyone in Air Selangor is committed to maintaining our recent improvements.

There have been a number of key initiatives in the year to improve communication with our customers. Information on water conservation, services and billings are printed at the back of the water bill in the form of an illustration. In addition, alert messages are disseminated electronically through Facebook, Twitter and smart phone application “MySYABAS” as well as “WhatsApp” Messenger Service groups. These social media platforms have been particularly useful in keeping customers up-to-date whenever there are unplanned water supply interruptions.

Our on-going investment in water pipe leak detection and repair has enabled us to manage the leakages through District Metering Zones (DMZ) and Pressure Management Zones (PMZ) to gradually reduce the Non-Revenue Water (NRW) from 34% to 25% by 2025. As at December 2015, the NRW had been reduced to 32%.

We have a planned capital investment programme to deliver the investment required to provide our customers with improved services, particularly in minimising water interruptions and providing adequate water supply. However, these plans will only be implemented upon obtaining approval from the National Water Services Commission (SPAN).

I hope that you will find the report both interesting and informative. Next year, we’ll report on the progress of the planned capital investments.

Suaimi Kamaralzaman
Chief Executive Officer
The water services industry in Selangor, Kuala Lumpur and Putrajaya underwent a restructuring exercise in 2015. The acquisition and consolidation of the water concession companies were undertaken by Pengurusan Air Selangor Sdn Bhd (Air Selangor), a wholly owned company of the Selangor State Government. Air Selangor acquired four concession companies, namely Syarikat Bekalan Air Selangor Sdn Bhd (SYABAS), Puncak Niaga (M) Sdn Bhd (PNSB), Konsortium ABASS Sdn Bhd (ABASS) and Konsortium Air Selangor Berhad (KASB). The acquisition of Syarikat Pengeluar Air Sg Selangor Sdn Bhd (SPLASH) is targeted to be completed towards the end of 2016.

After successful consolidation of all the water concession companies, Air Selangor will be the sole water supply service operator providing holistic water services from raw water abstraction and treatment to the distribution of treated water to consumers, including customer services and billings in Selangor, Kuala Lumpur and Putrajaya.

Air Selangor will be operating under the regulatory framework of the Water Services Industry Act, 2006 (WSIA) and Lembaga Urus Air Selangor (LUAS) Enactment, 1999 respectively under the regulation of the National Water Services Commission (SPAN) and Selangor Water Management Authority (LUAS).

Air Selangor operates & maintains 27,800 kilometres of water pipes, which is equivalent to the flight distance for two return trips from Kuala Lumpur to Mecca (6,977 km one way)

* Total No. of Employees: 4,198
WATER TREATMENT PROCESSES

There are 34 water treatment plants (WTP) that produce an average water supply of 4,667 million litres per day (MLD) for consumers in Selangor Kuala Lumpur and Putrajaya. Air Selangor manages 31 WTPs consisting of 25 fully conventional water treatment process WTPs, 3 advanced Dissolved Air Floatation (DAF) Clarification System WTPs, 2 advanced Ultrafiltration Membrane System WTPs as well as 1 Actiflo Water Clarification System WTP. Syarikat Pengeluar Air Sungai Selangor (SPLASH) operates 3 WTPs that produce 1,895 million litres per day of treated water supply.

The fully conventional water treatment system comprises vital processes, such as aeration, coagulation and flocculation, sedimentation/clarification, filtration, disinfection and pH adjustment.

Sg. Rumput and Kepong WTP were upgraded in 2007 to advanced ultrafiltration membrane system. Raw water is filtered through the ultra-membrane filtration system to remove suspended particle, colloids and bacteria without the addition of any coagulants.

Sungai Selangor Phase II Actiflo Water Clarification System

The water clarification process is by Actiflo-Settler, a compact unit with a high degree of operating flexibility. It uses micro sand as the catalyst to expedite the clarification process with facilities to recover the sand used. This system enables the clarification process time to be reduced from point of coagulation to outlet of the settling tank.

Wangsa Maju Dissolved Air Floatation Clarification System

The principle of floatation is based on the transfer of particles to the surface of a liquid through attachment of micro-bubbles to the particle surfaces.
The average water usage of a household a day is **1,083 litres**. This is equivalent to **3,094 bottles** of (350 millilitres) of mineral water.

Air Selangor operates and maintain the entire water services value chain from the reservoirs to distribution of treated water to consumers in Selangor, Kuala Lumpur and Putrajaya.

- Everyday, 34 water treatment plants supply **4,667 million liters a day** of water to **10 million consumers**
- Average domestic water bill in Selangor, Kuala Lumpur & Putrajaya is **RM24.30 or 81 sen** a day (before free 20m3 water in Selangor)
LOCATION OF DAM, WATER TREATMENT PLANT & MAIN TRUNK
(SELANGOR, FEDERAL TERRITORY of KUALA LUMPUR & PUTRAJAYA)

WATER TREATMENT PLANT

1. Sg. Selangor Phase I
2. Sg. Selangor Phase II
3. Sg. Selangor Phase III (Bukit Badong)
4. Sg. Semenyih
5. Sg. Langat
6. Sg. Selangor Phase III (Air Rasa)
7. Bukit Nanas
8. Sg. Batu
9. Sg. Labu
10. Wangsa Maju
11. Bernam River Headworks
12. Rantau Panjang
13. Bukit Tampoi
14. Cheras Batu 11
15. Sg. Sireh
16. Gombak
17. North Hummock
18. Batang Kali
19. Ampang Intake
20. Sg. Lolo (Old)
21. Sg. Lolo (New)
22. Salak Tinggi
23. Sg. Rangkap
24. Kalumpang
25. Kuala Kubu Bahru
26. Sg. Rumput
27. Kepong
28. Sg. Pangsooon
29. Sg. Dusun
30. Sg. Selisek
31. Sg. Tengi
32. Sg. Buaya
33. Sg. Serai
34. Sg. Pusu
WHERE IS YOUR MONEY SPENT?

Purchased of Water 36%
Finance & Lease Costs 27%
Electricity 6%
Chemicals 5%
Others 8%
Staff 12%
Repair & Maintenance 6%

Customer growth of 4% a year or an additional of 80,000 customers to serve

4,198 employees serving 10 million consumers in Selangor, Kuala Lumpur & Putrajaya

CAPITAL WORKS INVESTMENT

<table>
<thead>
<tr>
<th>Year</th>
<th>WTP Upgrading Works</th>
<th>NRW Reduction Programmes</th>
<th>Asset Management &amp; Replacement</th>
<th>Development &amp; Upgrading of Distribution System</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2.0</td>
<td>72.1</td>
<td>25.9</td>
<td>17.0</td>
<td>117.0</td>
</tr>
<tr>
<td>2012</td>
<td>0.0</td>
<td>102.0</td>
<td>24.2</td>
<td>23.5</td>
<td>149.7</td>
</tr>
<tr>
<td>2013</td>
<td>0.0</td>
<td>181.9</td>
<td>36.4</td>
<td>30.8</td>
<td>249.1</td>
</tr>
<tr>
<td>2014</td>
<td>1.8</td>
<td>101.2</td>
<td>35.5</td>
<td>28.0</td>
<td>166.5</td>
</tr>
<tr>
<td>2015</td>
<td>0.0</td>
<td>94.5</td>
<td>16.7</td>
<td>54.1</td>
<td>165.3</td>
</tr>
</tbody>
</table>
WHERE DO WE INVEST YOUR MONEY? COST OF TREATED WATER

- Average domestic bill before free 20m³ water in Selangor: **RM24.30** per month.

- For every **RM1.00** of revenue earned, the concession companies (water treatment plant operators) charge **RM1.15** to supply treated water to SYABAS.

- Average cost of treating & distributing water: **RM2.16** per m³; Average tariff charged to consumers: **RM1.51** per m³.

---

Sg. Semenyih Raw Water Intake

Sg. Labu Off-River Storage Reservoir
HOW DO WATER METERS WORK?

A water meter is a mechanical device with a series of internal gears. These gears move as water flows through the meter, recording your usage. This process is similar to how an automobile odometer records the mileage as the tyres rotate. All meters are factory calibrated to industry standards prior to being shipped, and last 10 to 15 years. After that time, they can begin to wear, allowing more water to flow through the period than is actually recorded with the result being an underbilled customer.

HOW TO READ WATER METER?

- Lift the meter counter cover.
- The meter counter displays 8 digits, 4 digits in white and 4 digits in red.
- The reading on the meter counter shows the consumer’s total water consumption is 748.1910m³ and therefore the bill is issued as 748m³.

<table>
<thead>
<tr>
<th>0</th>
<th>7</th>
<th>4</th>
<th>8</th>
<th>1</th>
<th>9</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x 1000m³</td>
<td>x 100m³</td>
<td>x 10m³</td>
<td>x 1m³</td>
<td>x 0.1m³</td>
<td>x 0.01m³</td>
<td>x 0.001m³</td>
</tr>
<tr>
<td></td>
<td>0 x 1000 = 0</td>
<td>7 x 100 = 700</td>
<td>4 x 10 = 40</td>
<td>8 x 1 = 8</td>
<td>1 x 0.1 = 0.1</td>
<td>9 x 0.001 = 0.0009</td>
<td>1 x 0.001 = 0.001</td>
</tr>
</tbody>
</table>

MALAYSIA’S WATER CONSUMPTION IS TYPICALLY 230 LITRES PER DAY PER PERSON AS COMPARED TO EUROPE’S 160 LITRES PER DAY, SINGAPORE’S 150 LITRES PER DAY AND THAILAND’S 180 LITRES PER DAY
On average, most water pipes in Selangor and Kuala Lumpur are more than 30 years old.

About 49% of pipes are mild steel, 23% asbestos cement, 13% Unplasticised Polyvinyl Chloride (uPVC) and 15% a mixture of various types of pipes. The frequent leaks and burst pipes problems are from the old asbestos pipes.
Another initiative to reduce NRW has been to identify illegal connection of water supply, namely at construction sites, abattoirs, high-rise properties etc.

On average, the NRW had gradually reduced to 32% or 1.5 million m³ per day as at December 2015.

For the past five years, NRW losses due to water theft registered over 12,000 m³ worth RM32 million from more than 3,000 cases.

As at December 2015, 682 illegal connection cases were resolved through legal actions amounting RM2.2 million. There are 1,295 cases amounting to RM9.2 million still being pursued by Legal Department.

**AVERAGE NON-REVENUE WATER (NRW)**

<table>
<thead>
<tr>
<th>Losses (m³ Mil)</th>
<th>Losses (RM '000)</th>
<th>No of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>2.6</td>
<td>534</td>
</tr>
<tr>
<td>2.0</td>
<td>3.1</td>
<td>730</td>
</tr>
<tr>
<td>3.0</td>
<td>5.1</td>
<td>441</td>
</tr>
<tr>
<td>4.0</td>
<td>14.6</td>
<td>513</td>
</tr>
<tr>
<td>5.0</td>
<td>6.4</td>
<td>997</td>
</tr>
</tbody>
</table>

NRW (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>NRW (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>32.3</td>
</tr>
<tr>
<td>2012</td>
<td>33.0</td>
</tr>
<tr>
<td>2013</td>
<td>34.5</td>
</tr>
<tr>
<td>2014</td>
<td>33.6</td>
</tr>
<tr>
<td>2015</td>
<td>32.0</td>
</tr>
</tbody>
</table>
WATER LOSSES? WE LOSE WATER IN A NUMBER OF WAYS

Water Pipe Leakages

- On average, there are 211 leaked pipes a day. The pipes are repaired immediately upon receiving feedback from the public at large or identified through internal monitoring systems.

- In cases of frequent burst pipes, a replacement programme is put in place to replace the pipes which are old and economically not worth repairing. The cost for replacing 1 kilometre of damaged or old pipe is close to RM1 million.

Water Meter

- Old water meters, which are more than 10 years old, is one of the causes of inaccurate water usage readings.

- Occasionally, water meter not installed based on specifications could also cause inaccurate water usage readings.

Illegal Connection / Water Theft

- In 2015, 997 cases of water theft were detected with losses worth RM2.1 million for 6.4 million m³ of water.

- A dedicated team has been formed to detect illegal connections on a full time basis.

WATER THEFT

Did you know?
One can be infected by water borne diseases due to improper or illegal connection of pipes
WATER METER REPLACEMENT

- From 2011 to 2015, 1,159,894 water meters were replaced, comprising 44% (511,798) 10 years old water meters and 56% (648,096) faulty water meters.

Life span of water meter is typically 10 years old, which needs replacement.

<table>
<thead>
<tr>
<th>Year</th>
<th>Aged Meter</th>
<th>Faulty Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>6,355</td>
<td>48,557</td>
</tr>
<tr>
<td>2012</td>
<td>179,877</td>
<td>83,315</td>
</tr>
<tr>
<td>2013</td>
<td>202,701</td>
<td>164,538</td>
</tr>
<tr>
<td>2014</td>
<td>70,610</td>
<td>242,351</td>
</tr>
<tr>
<td>2015</td>
<td>52,255</td>
<td>109,335</td>
</tr>
</tbody>
</table>
LEAKING PIPES

- On average, in 2015 there were 211 leaking pipes and 14 burst pipes a day. However, with proper pressure management and replacement of old pipes, the number of leaked pipes and burst pipes recorded a reduction of 3% (2,649) and 17% (1,061) respectively in 2015.

BURST PIPES

- In 2013 and 2014, 36.6 kilometres and 91.4 kilometres of old pipes were replaced respectively. Prior to these years, only 11.4 kilometres of old pipes were replaced.

- In 2016 and 2017, 59 kilometres of old pipes will be replaced at a total cost of RM50 million.
The total length of water pipes as at December 2015 is 27,831 kilometres.

On average, about 211 pipes leaked or burst per day in 2015. However, with proper pressure management and replacement of old pipes, the number of leaked pipes and burst pipes recorded a reduction of 3% (2,649) and 17% (1,061) respectively in 2015.

There are various types of pipe materials, 49% (13,664km) are Mild Steel, 23% (6,293 km) are Asbestos Cement, 13% (3,716km) are Unplasticised Polyvinyl Chloride (uPVC), 7% each are Ductile Iron (2,033km) and High-Density Polyethylene (1,888km HDPE).

In 2013 and 2014, 36.6 kilometres and 91.4 kilometres of old pipes were replaced respectively. Prior to these years, only 11.4 kilometres of old pipes were replaced.

The age of the pipes are being collated by location. Many of the pipes in existing districts and cities are estimated to be more than 30 years old.

For 2016 and 2017, RM50 million has been allocated to replace 59 km of most frequently leaking or burst pipe areas.
OUR CUSTOMER RELATIONSHIP SERVICES

- The Call Centre operates 24 hours a day and 7 days a week on 3-work shifts with a pool of 60 agents supported by Call Logging and Telephony System.

- In March and April 2014, a long dry spell resulted in water rationing that affected many consumers. Hence, there were numerous calls received enquiring and requesting for water supply. The highest number of calls received was on 6 April 2014 with 14,688 calls.

- In 2015, the incoming calls were reduced to 1.2 million or an average of 3,379 calls per day mainly on water interruptions due to pipe bursts and leaks.

- As part of the initiative to provide early warning to affected consumers during temporary water interruptions and prevent congestion of the telephony system, the Customer Service Department embraced social media, namely ‘Facebook’ and ‘Twitter’ in 2009, created ‘Whatsapp’ messenger group as well as ‘MySyabas’ smart phone application in 2014 to provide status update to residents associations, opinion leaders and community leaders.

- To date, 32,332 consumers had downloaded the ‘MySyabas’ application to view scheduled and unscheduled water interruptions, check billing information, media releases and submit enquiries/complaints.
OUR MEDIUM OF COMMUNICATIONS IN 2015

- 1,216,538 calls through our 24 hours call centre
- 7,504 through sms
- 77 groups with 21,000 members
- 10,469 faxed documents
- 67,825 e-mails received
- 32,332 mobile phone users have installed the application
- 4,093 messages
- 1,780 prefer reaching us via our online portal
- 672,543 customers walk-in to our office’s counter service
COMPLAINTS

- Complaints of no water supply during improvement works on the water distribution or treatment systems as well as unplanned water interruption due to burst pipes.

- High bills mainly due to leakage within the premises’ internal piping or water storage tanks.

- Faulty meters at premises, which are more than 10 years old, resulting in inaccurate water readings.
WATER QUALITY

- The overall compliance standard provides a measure of the water quality at customers' taps against the specified standards.

- The treated water quality continues to improve despite increased levels of pollution in the rivers since 2013 with a compliance of above 99.6%.

- In March 2016, the National Water Services Commission complimented SYABAS for excellent performance in complying to five main parameters and achieving zero violation under the Ministry of Health’s “Quality Assurance Programme” for treated water in Selangor, Kuala Lumpur and Putrajaya.

Water Quality Monitoring System
MIGRATION

- Migration Programme was initiated in 2007 to assist residential buildings and gated communities’ Joint Management Bodies (JMB) or Management Corporations (MCs) in the collection of Water Bill payments from individual unit owners or occupants and alleviate the problem of bulk meter water supply disconnections due to mounting water bill arrears.

- From 2011, over 400,000 domestic premises have been successfully migrated to individual meters.

- As of today, there are 1,232 bulk meters in condominiums and 18 bulk meters in low-cost flats which have not been migrated.

- For 2016, it is targeted that 90 bulk meters with 25,000 units of domestic premises will be migrated to individual meters.

![Graph showing the increase in the number of individual and bulk meters from 2011 to 2015.]

<table>
<thead>
<tr>
<th>Year</th>
<th>Bulk Meters</th>
<th>Individual Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>203</td>
<td>49,963</td>
</tr>
<tr>
<td>2012</td>
<td>289</td>
<td>61,047</td>
</tr>
<tr>
<td>2013</td>
<td>389</td>
<td>85,615</td>
</tr>
<tr>
<td>2014</td>
<td>460</td>
<td>99,613</td>
</tr>
<tr>
<td>2015</td>
<td>513</td>
<td>114,479</td>
</tr>
</tbody>
</table>
BILLING & COLLECTION

- Payment amount collected from SYABAS counters account for 51% of the total collections. However, 81% of the transactions were mainly through collection agencies.

- As at 2015, the total cumulative outstanding debt was RM199 million. In 2015, the total debt for the year was RM19 million (1% of billed amount).

![Graph showing mode of collection: amount and transaction]