



Ranhill

Ranhill Water Services

The NRW Specialist



Company Overview

- RWS specialises in the provision of water supply related operational, administration, management, and consultancy services to meet the needs of water operators
- Incorporated in 2005 with 100 staff to initially focus on the NRW reduction programs in Johor
- By now, RWS has the strength of more than 400 dedicated staff and has completed several NRW and water related contracts in the region valued at more than RM650 million
- Born with the objective of effectively managing NRW, our skills were acquired when managing water supply operations in SAJH

Company Overview

- Non Revenue Water (NRW) management is our core business
- Other than Malaysia, RWS' ventures include a number of overseas contracts in Riyadh, Kathmandu, Surabaya, Mysore and several Water Operator Partnership programs in the region
- RWS has worked in 7 states in Malaysia and is currently having contracts in 5 regions namely Johor, Kelantan, Pahang, Perak and Wilayah Persekutuan



Malaysia is located in Southeast Asia, between Singapore, Thailand and Indonesia. The huge island of Borneo is shared with Brunei and Indonesia, and borders in the north to the Philippines



RWS operation office is situated in Johor Bahru. Johor Bahru is the Southernmost City in Malaysia. It is the capital of the Johor State. Johor Bahru is connected by two bridges with neighboring country Singapore.



RWS' Achievements To Date

430 MLD water saved

16,277 km pipelines surveyed & geo-coded in GIS

194 Strategic and All Mains models completed with over 1 million total number of connections

Over 1631 DMAs Designed & Established

More than 505,494 km pipelines surveyed for leaks

That's more than 12 times the earth's circumference.

Ranhill Holdings Structure



Ranhill

RANHILL CAPITAL

ENERGY



RANHILL POWERTRON I

RANHILL POWERTRON II

RANHILL POWER O&M

RANHILL POWER O&M II

RANHILL POWER SERVICES

ENVIRONMENT



SAJ HOLDINGS

RANHILL WATER SERVICES

PREMIER WATER SERVICES

RANHILL WATER TECHNOLOGIES

Mission Statement

To Provide Total Engineering, Construction And Services To Water Industries Which Contribute To Nation Building And To Achieve Preferred Status By Performing Work Of Outstanding Value Which Satisfies Our Customers' Requirements, Fulfill Our Employee's Needs For Job Satisfaction, And Upholds The Public Interest For Integrity, Safety And Environmental Sensitivity



Vision Statement

To Be A company Of Substance And Of International Repute, A Preferred Provider In Integrated Engineering, Construction And Services In Water Industry

Our Strengths

- RWS is one of the largest NRW service providers in the region with a strength of more than 400 dedicated staff and holds the largest market share in Malaysia in terms of pipe length and number of connections
- RWS possesses international exposure in NRW management and water supply operations
- We have the resources (expertise, latest equipment and technology) ready to provide complete NRW services
- We are backed by the largest engineering group in Malaysia (Ranhill) and one of the most successful water companies in Malaysia (SAJH)
- Our positive track records



Products & Services



WHAT IS NRW

Definition

International Water Association (IWA) defines the terms NRW as:

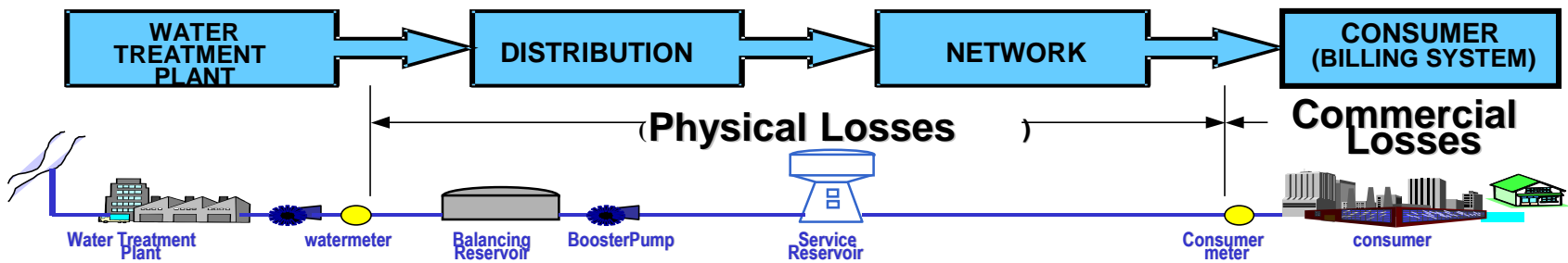
“Those components of System Input which are not billed and do not produce revenue. It is equal to Unbilled Authorized Consumption plus Physical (Real) and Commercial (Apparent) Water Losses”

or in a simple equation:

$$\text{NRW} = \text{System Input Volume (Production)} - \text{Billed Authorised Consumption (Billing)}$$

WHAT IS NRW

Where It Happens



- Not all WTPs are metered
- Faulty Meters.
- Inaccurate WTP meters

- **Leakages & bursts:**
 - Distribution mains.
 - Booster pump houses.
 - Valves.
 - Reservoirs & suction tanks

- Reticulation mains.
- Communication pipes.
- Hydrants.
- Unstable pressure

- Billing system.
- Faulty meters.
- Aging meters
- Inaccessible meters
- Water theft.

Products & Services



- Non-Revenue Water Management
- Web-based NRW Monitoring and Analysis – AQUASmart System
- Geographical Information Systems (GIS)
- Network Modelling
- Network Operations & Maintenance
- Technical Consultation
- Trainings
- NRW Civil Works

NRW Management

NRW Management Components:

- NRW Studies & Strategy Development
- NRW Awareness
- Development of Water Balance
- Establishment of Control Room
- DMA Establishment
- Pressure Management
- Data Analysis & Interpretation
- NRW Monitoring System
- Leakage Detection and Repair
- Reservoir Monitoring
- Flow Balancing
- Customer Surveys
- NRW Training and Development
- Asset Installation & Maintenance



Water Strategic Management and Analytical Resource Terminal (AquaSMART)

Developed in-house by RWS, AquaSMART serves as a NRW advanced operational tool which uses web-based application to analyze and monitor the status of water supply system

Benefits of AquaSMART:

- Integration of various sourced data into a single platform
- Reduction of analysis duration
- Elimination of human error in analysis
- Expedite response time
- Reduced dependency on staff
- Ease of supervision on NRW activity performance
- Improved ability to fine-tune NRW reduction
- Production of reports



Project Showcase



Johor Phase I Experience

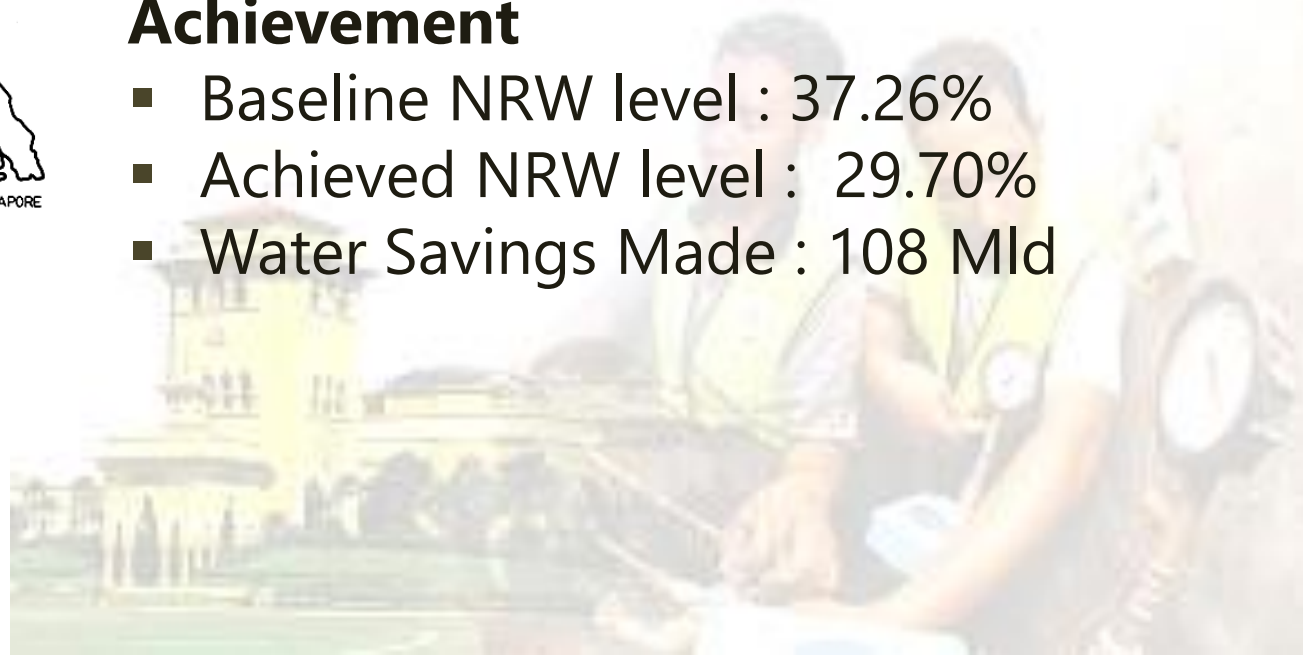
(April 2005-March 2011)



- Population Served : 3,320,000
- Total Production : 1,433 Mld
- Total No of Connections : 860,000
- Total Length of Pipe : 17,802 km

Achievement

- Baseline NRW level : 37.26%
- Achieved NRW level : 29.70%
- Water Savings Made : 108 Mld



Johor Phase II Experience

(July 2011-June 2013)



- Population Served : 3,500,000
- Total Production : 1,500 Mld
- Total No of Connections : 964,000
- Total Length of Pipe : 19,200 km

Achievement

- Baseline NRW level : 29.70%
- Achieved NRW level : 27.00%
- Water Savings Made : 41 Mld



Johor Phase III Experience

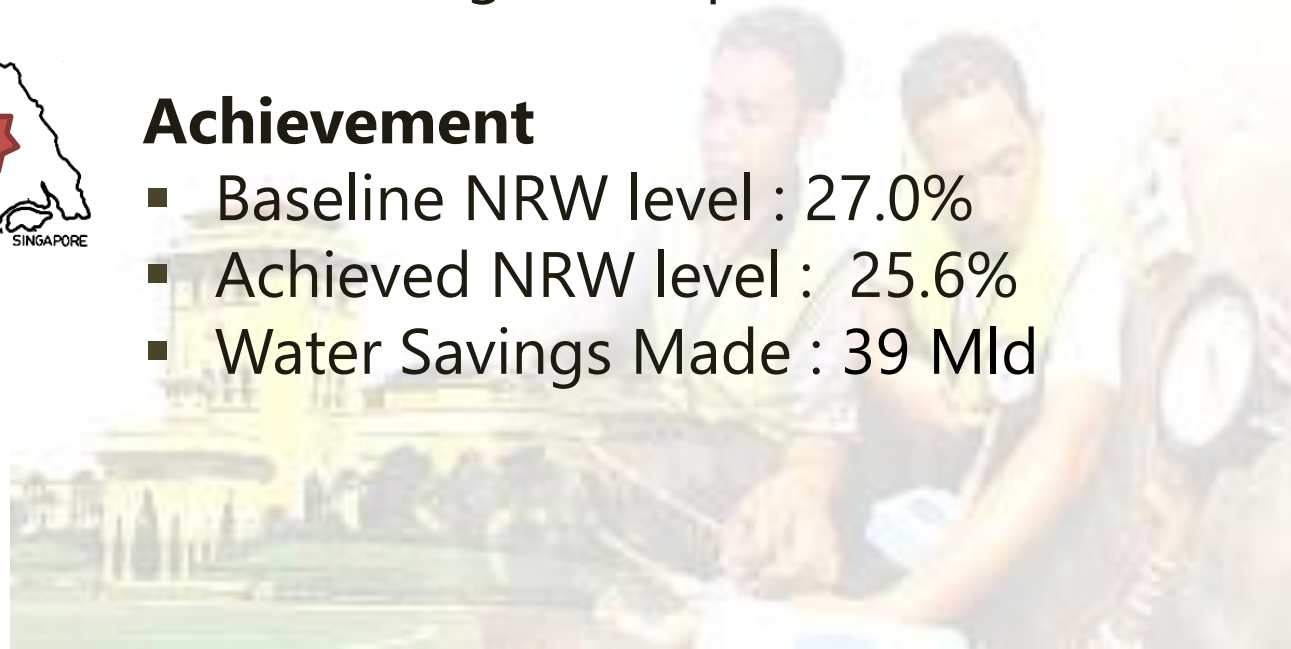
(July 2013-June 2015)



- Population Served : 3,800,000
- Total Production : 1,568 Mld
- Total No of Connections : 1,018,000
- Total Length of Pipe : 20,800 km

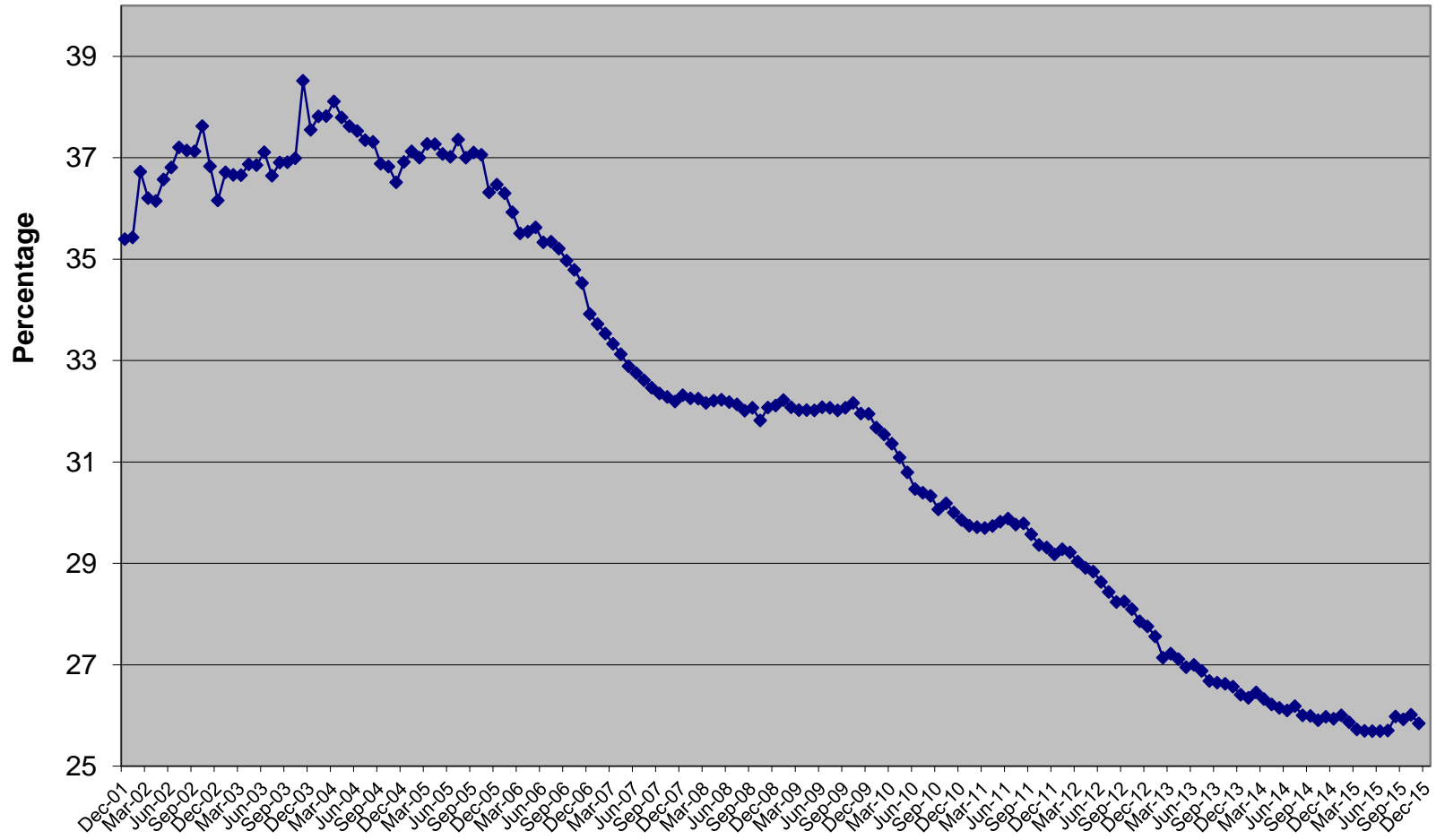
Achievement

- Baseline NRW level : 27.0%
- Achieved NRW level : 25.6%
- Water Savings Made : 39 Mld



NRW Reduction Trend in Johor

NRW in Johor (2002 - 2015)



Melaka Experience

(December 2007-December 2011)



- Population Served : 713,000
- Total Production : 428 Mld
- Total No of Connections : 215,024
- Total Length of Pipe : 4,671 km

Achievement

- Baseline NRW level : 33.96%
- Achieved NRW level : 25.78%
- Water Savings Made : 35 Mld

Melaka Phase II Experience

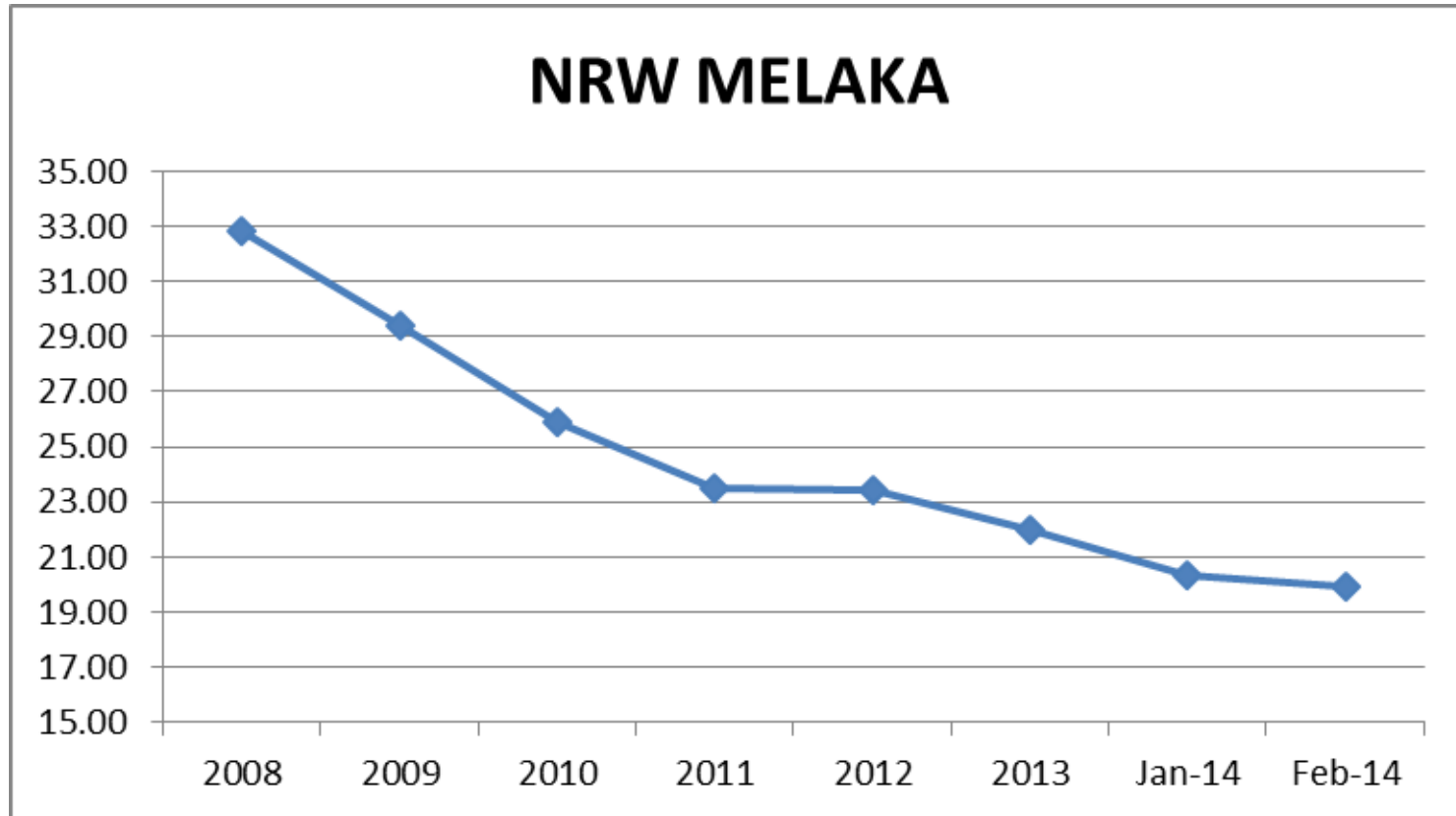


- Population Served : 877,000
- Total Production : 532 Mld
- Total No of Connections : 265,767
- Total Length of Pipe : 4,851 km

Achievement

- Baseline NRW level : 26.0%
- Achieved NRW level : 21.5%
- Water Savings Made : 24 Mld

NRW Reduction Trend in Melaka



Kedah Tengah Experience

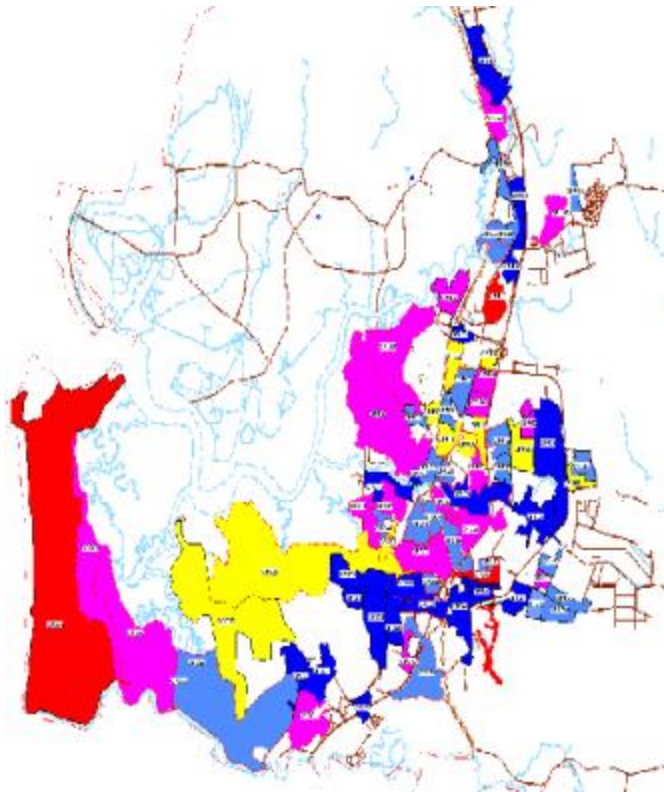


- Population Served : 445,300
- Total Production : 293 Mld
- Total No of Connections : 93,345
- Total Length of Pipe : 1,125 km

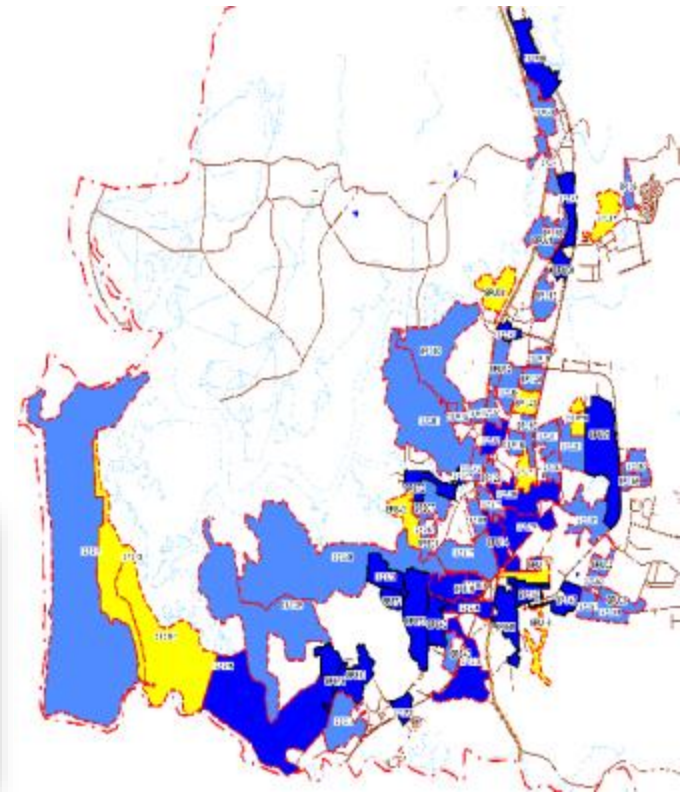
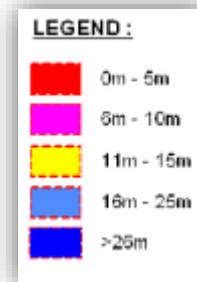
Achievement

- Total Production reduced by 4.6%
- 80 permanent DMAs established
- Pumping hours reduced by 7143 hrs equivalent to one pump running 298 days
- Electricity usage reduced by 366,278 Kwh
- Deferred upgrading of existing WTP
- Total water savings achieved: 54 Mld

Kedah Tengah Experience



Before ALC and leak Repairs, 2008



After ALC and leak Repairs, 2010

Overall improvement in pressure distribution

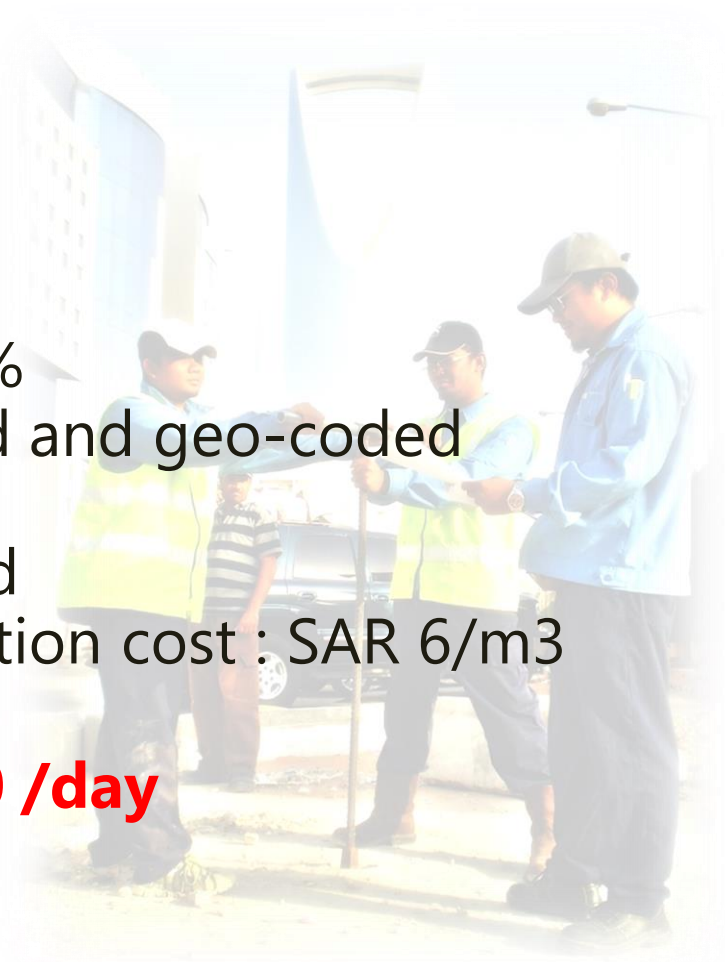
Riyadh Experience

- Total No of Connections : 180,000
- Total Length of Pipe : 6,832
- Intermittent Supply

Achievements

- Baseline leakage level : 37%
- Achieved leakage level : 13%
- 6800km of pipeline surveyed and geo-coded
- 45 DMAs established
- Water Savings Made : 54 mld
- Savings Made (SAR), production cost : SAR 6/m³

SAR 323,634.00 /day



Besut / Setiu Experience



- Population Served : 37,781
- Total Production : 74.15 Mld
- Total No of Connections : 13,782
- Total Length of Pipe : 560 km

Achievement

- Baseline leakage level : 48.86%
- Achieved leakage level : 21.3%
- Water Savings Made : 20 Mld

Hulu Terengganu / Dungun Experience



- Population Served : 43,940
- Total Production : 85.9 Mld
- Total No of Connections : 15,978
- Total Length of Pipe : 510 km

Achievement

- Baseline leakage level : 50.0%
- Achieved leakage level : 15.0%
- Water Savings Made : 30 Mld

Water Operator Partnership Programs

Water Operator Partnerships (WOP) funded by United States Agency for International Development (US AID) and Asian Development Bank (ADB)

- **Objective :**
 - To build the capacity of recipient organizations
- **Organizations and countries :**
 - Maharashtra Jeevan Prandikhan (MJP), India
 - Public Health and Engineering Department (PHED), Rajasthan, India
 - Perusahaan Daerah Air Minum (PDAM) Surabaya
 - PDAM Tirta Khatulistiwa of Indonesia
 - Bach Ninh Water Supply Company of Vietnam
 - Provincial Water Authority (PWA) of Thailand.
- **Scope :**
 - DMA Establishment & NRW Management
 - Network Modelling
 - Customer Service & Billing
 - Pressure Management & Network Operations
 - World Health Organization (WHO) Water Safety Plan

Other Completed Projects

BIL	NAMA KONTRAK/PROJEK DAN SKOP KERJA	NILAI KONTRAK	TEMPOH KONTRAK	TARIKH MILIK TAPAK	TARIKH SIAP		NAMA DAN ALAMAT MAJIKAN
		RM	**		KONTRAK	SEBENAR	
1	Establishment of Pilot DMZ at Air Keroh, Melaka	RM 49,000	12 Minggu	23.08.2005	12.11.2005	12.11.2005	Perbadanan Air Melaka Graha Maju, Tingkat 12, Jalan Graha Maju, 75000, Melaka
2	Non-Revenue Water (NRW) services in The State of Johore	RM 112,000,000	72 months	01.04.2005	31.03.2011	31.03.2011	SAJ Holdings Sdn Bhd, Jalan Garuda, Larkin 80350 Johor Bahru Johor
3	Changi International Airport, Singapore Active Leakage Detection Project	RM 144,187.50	1 weeks	23.06.2006	30.06.2006	23.07.2006	ST Synthesis Pte Ltd 249, Jalan Boon Lay, Singapore, 619523
4	Establishment of DMZ at Kampong Lapan, Melaka	RM 141,016	5 months	10.07.2006	10.01.2007	10.01.2007	Perbadanan Air Melaka Graha Maju, Tingkat 12, Jalan Graha Maju, 75000, Melaka
5	Network Modelling Field Test Activities Project in Jurong, Singapore	RM 222,610.53	4 weeks	15.08.2006	Nov 2006	Nov 2006	Credent Technology, 85, Science Park Drive, #02-01/04 Singapore, 118259
6	Malang (Mojolangu area) Network Modelling Project	RM 238,852.50	15 months	01.09.2007	01.12.2008	01.12.2008	Credent Technology, 85, Science Park Drive, #02-01/04 Singapore, 118259
7	Non-Revenue Water (NRW) Works In The State Of Melaka	RM 36,403,518	48 months	03.12.2007	03.12.2011	03.12.2011	Syarikat Air Melaka Berhad Graha Maju, Tingkat 12, Jalan Graha Maju, 75000, Melaka

Other Completed Projects

BIL	NAMA KONTRAK/PROJEK DAN SKOP KERJA +	NILAI KONTRAK	TEMPOH KONTRAK	TARIKH MILIK TAPAK	TARIKH SIAP		NAMA DAN ALAMAT MAJIKAN
		RM	**		KONTRAK	SEBENAR	
8	Non-Revenue Water (NRW) Services in the District of Kedah Tengah	RM 39,373,590.91	30 months	05.02.2008	01.09.2010	31.10.2010	PJS Utilities-Z&I JV Unit 307, Block C, Phileo Damansara 1, No 9, Jalan 16/11, Off Jalan Damansara, 46350, Petaling Jaya, Selangor, Malaysia
9	Establishment of DMA Taman Sri Layang, Mentakab, Temerloh District	RM 17,700	4 months	06.08.2008	09.12.2008	09.12.2008	JBA Temerloh, No 6&8 Jalan Pak Sako 4, Bandar Seri Semantan 28000 Temerloh Pahang
10	Projek Cadangan Kerja 'Active Leakage Control' dan yang berkaitan dengannya Bagi Program Pengawalan Kehilangan Air (NRW) Bagi Daerah Besut & Setiu.	RM 4,160,980	16 months	09.10.2011	23.02.2013	23.02.2013	Syarikat Air Terengganu Sdn.Bhd (SATU), Jalan Sultan Ismail, 20200 Kuala Terengganu, Terengganu
11	Non- Revenue Water (NRW) Strategy for Surabaya Water Company (PDAM Surabaya), Indonesia	RM 468,000	38 Weeks	06.09.2010	30.04.2011	30.05.2011	Perusahaan Daerah Air Minum, Jl. Maymen, Prof. Dr. Moestopo, No.2 Surabaya, Indonesia
12	Non- Revenue Water (NRW) Reduction in the State of Johor for the Period of Two (2) Years	RM 40,032,891	24 months	01.07.2011	30.06.2013	30.06.2013	SAJ Holdings Sdn Bhd, Jalan Garuda, Larkin 80350 Johor Bahru Johor
13	Perkhidmatan Konsultansi Bagi Program Pengurangan Air Tidak Berhasil (NRW) Di Seluruh Negeri Melaka Untuk Syarikat Air Melaka Berhad	RM 4,100,000	24 months	02.05.2012	01.05.2014	01.05.2014	Syarikat Air Melaka Berhad Graha Maju, Tingkat 12, Jalan Graha Maju, 75000 Melaka.

Other Completed Projects

BIL	NAMA KONTRAK/PROJEK DAN SKOP KERJA +	NILAI KONTRAK	TEMPOH KONTRAK	TARIKH MILIK TAPAK	TARIKH SIAP		NAMA DAN ALAMAT MAJIKAN
		RM			KONTRAK	SEBENAR	
14	Kerja – Kerja 'Active Leakage Control' Dan Yang Berkaitan Dengannya Bagi Program Pengawalan Kehilangan Air (NRW) Daerah Dungun Dan Hulu Terengganu	RM 4,190,000	15 months	29.10.2012	26.01.2014	26.01.2014	Syarikat Air Terengganu Sdn.Bhd (SATU), Jalan Sultan Ismail,20200 Kuala Terengganu, Terengganu
15	Leakage Reduction Project in Riyadh, Kingdom Of Saudi Arabia	RM 17,000,000	32 months	15.02.2009	08.10.2011	08.10.2011	Saudi Tumpane Company Ltd/International Armoon Corporation Joint Venture P.O. Box 4414, Riyadh 11491, Kingdom of Saudi Arabia
16	NRW Consultancy Services Within DMA in Mysore City - Providing Integrated Management System, Design, Analysis, Rehabilitation and Transforming the Existing Intermittent Water Supply Distribution System		2.7 months	25.05.2011	14.08.2011	14.08.2011	Jamshedpur Utilities & Seviles Company Limited Sakchi Boulevard Road Northern Town Bistupur Jamhedpur – 831 001 India
17	Capacity Building and Private Public Partnership Support Team (CBP Team) for The Management And Operation of Kathmandu Upatyaka Khanepani Limited		51 months	March.2010	30.06.2014	30.06.2014	Kathmandu Upatyaka Khanepani Limited Tripureswor Chowk, Kathmandu 446000, Nepal.

Other Completed Projects

BIL	NAMA KONTRAK/PROJEK DAN SKOP KERJA +	NILAI KONTRAK	TEMPOH KONTRAK	TARIKH MILIK TAPAK	TARIKH SIAP		NAMA DAN ALAMAT MAJIKAN
		RM	**		KONTRAK	SEBENAR	
18	Tender secara rundingan terus untuk: Projek Pembinaan Tangki Air dan Pemasangan Paip Retikulasi untuk Pembangunan Perumahan dan Infrastruktur Di Plot A Ke Atas Penduduk Yang Terlibat Dengan Pembangunan Hub Industri Minyak Dan Gas Di Pengerang, Kota Tinggi, Johor Darul Takzim	RM 16,978,831.43	18 bulan	09.07.2013	08.01.2015	08.01.2015	Lembaga Kemajuan Johor Tenggara, Bangunan Ibu Pejabat KEJORA, Jalan Dato' Hj. Hassan Yunus, 81930, Bandar Penawar, Johor.
19	Design, Construction, Supply, Delivery, Installation, Intergration, Testing And Commissioning Of The Programme Of Works For Proposed Raw Water Supply From Layng Dam To Tanjung Langsat Industrial Area, Pasir Gudang, Johor.	RM 43,000,000	10 bulan	08.03.2010	07.01.2011	07.01.2011	Pejabat Setiausaha Kerajaan Johor, Aras 3, Kompleks Menteri Besar, Kota Iskandar 79503 Nusajaya, Johor
20	Non-Revenue Water (NRW) Reduction In The State of Johor for The Period of Two (2) Years	78,042,240.00	24 bulan	07.01.2013	07.01.2013	30.06.2015	SAJ Holdings Sdn Bhd, Jalan Garuda, Larkin 80350 Johor Bahru Johor
21	Projek Perlaksanaan NRW seluruh Negeri Kelantan Fasa II Kerja-kerja "Active Leakage Control' Dan Yang Berkaitan Dengannya Bagi Pengawasan Kehilangan Air Seluruh Negeri Kelantan	38,628,280.00	24 bulan	27.02.2013	27.02.2013	26.02.2015 EOT : End 26 September 2015	Syarikat Air Kelantan Sdn.Bhd,Tingkat 3, Bangunan Perbadanan Menteri Besar Kelantan (PMBK),Lot 2 & 257, Jalan K.Krai, 15050, Kota Bharu.

On-Going Contracts

NRW Reduction Contract Phase IV for the state of Johor, Malaysia
Location: Johor, Malaysia; Client: SAJ Holdings Sdn. Bhd.

Kuala Lipis NRW Reduction Contract
Location: Pahang, Malaysia; Client: Pengurusan Air Pahang

NKEA Greater KL (River of Life) : Sewerage Pipe Rehabilitation In Kuala Lumpur City
Location: Kuala Lumpur, Malaysia; Client: Jabatan Perparitan & Pembentungan



Benefits of Our Services

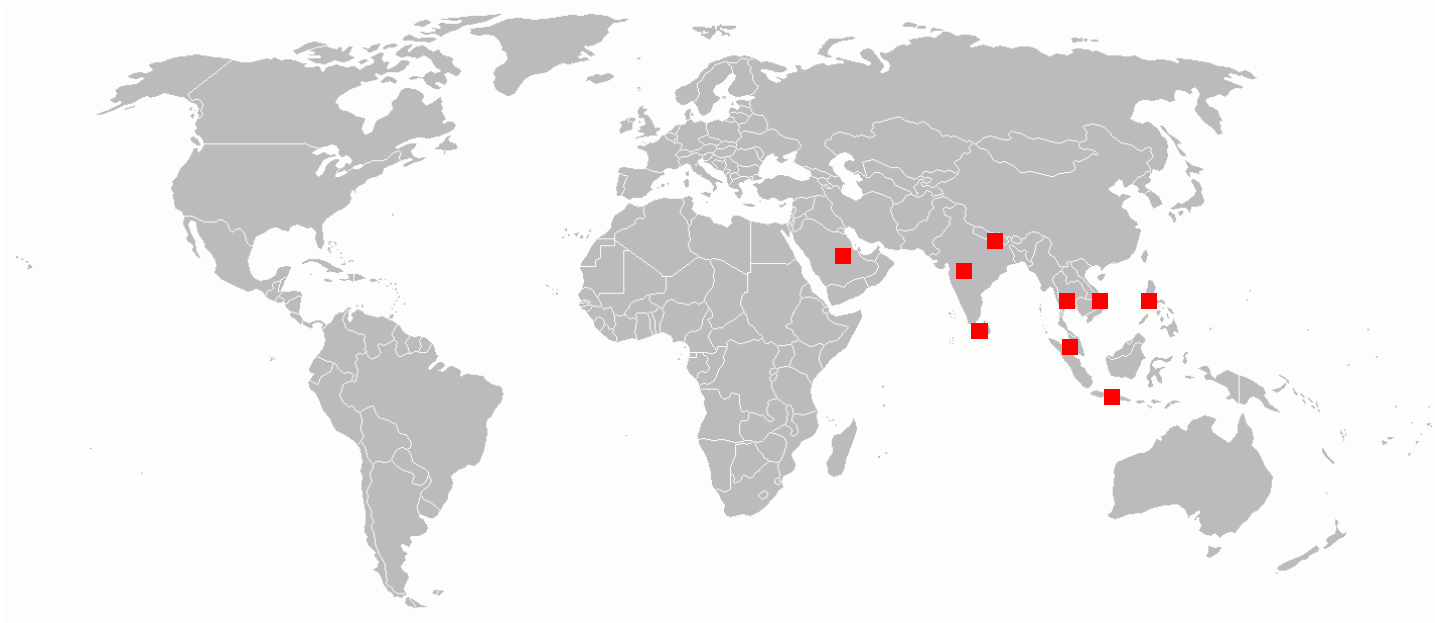
- Reduced production cost
- Deferral of Capital Expenditure
- Reduced losses in supply network
- Increased revenue (additional potential billed usage)
- Improved operational efficiency (production, billing, network maintenance)
- Better water operator services through better pressure management
- Elevated image of water operator
- Sustainable water supply operations



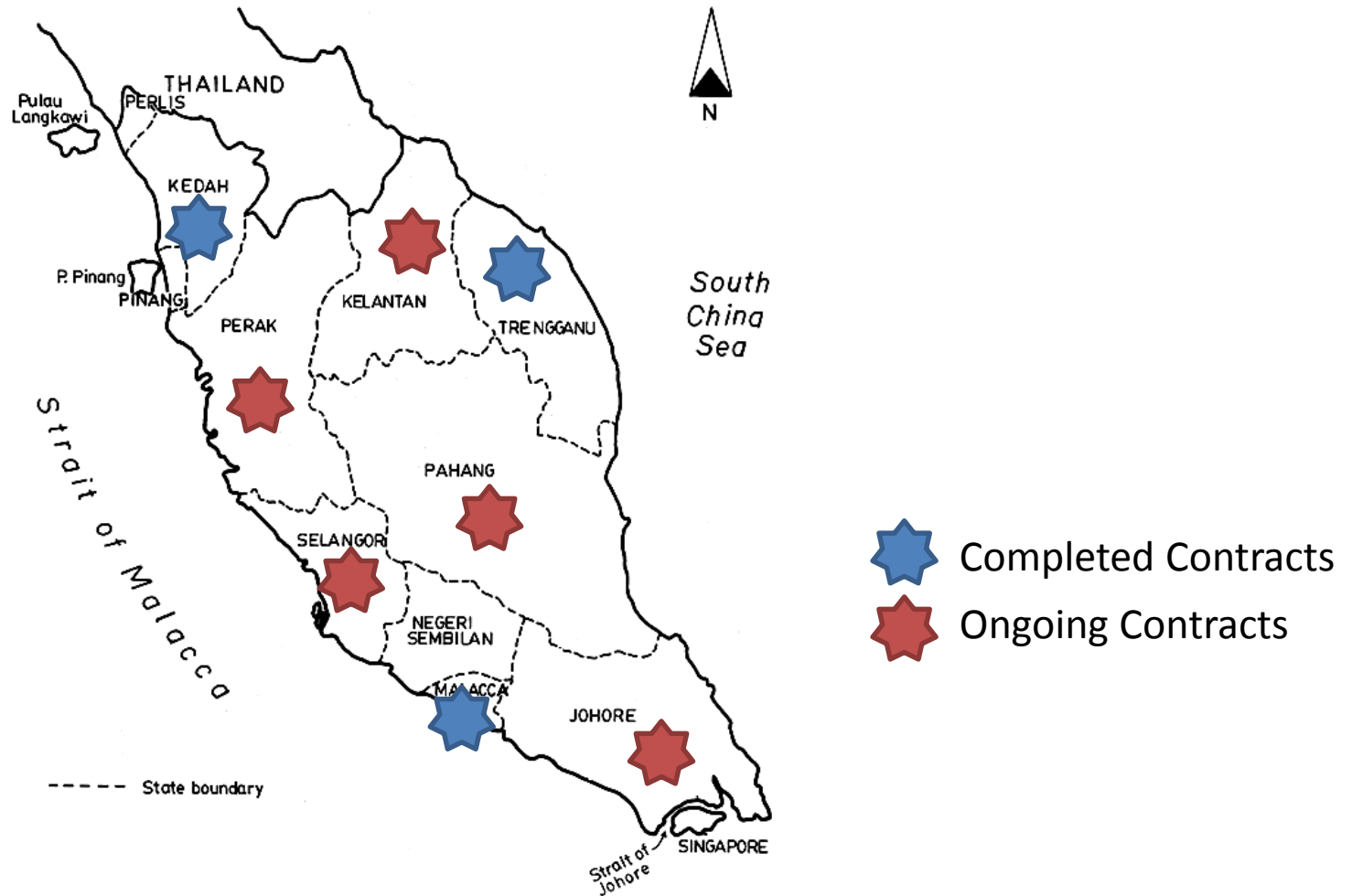
Where We Have Been

RWS' knowledge and expertise has benefitted the following countries to date in our quest for improved water supply operations

Malaysia, Indonesia, Saudi Arabia, India, Nepal, Thailand, Vietnam, Sri Lanka & Philippines



Malaysian Experience



Thank You
visit us:
www.rws.com.my

