MANILA WATER
CARE IN EVERY DROP

Reducing Non-Revenue Water to Meet Increasing Urban Water Demand

Manila Water Story on NRW Reduction in
Metro Manila, Ho Chi Minh, and Yangon

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- Accelerating economic growth means increasing water demand, especially in urban cities, demand its public infrastructures to keep up with the development.
- Developing and expanding water distribution systems without a program for reducing Non Revenue Water means expanding a cycle of inefficiency.
- The springboard for the success in transforming water sector in Metro Manila and in Vietnam is Public-Private Partnership.

KEY MESSAGES

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- In 2013, an estimated 3.2billion people live in cities and urban regions around the world.
- This figure is estimated to grow to 5 billion by 2030, where 3 out of every 5 people live in urban regions.
- Water demand will be geographically concentrated in these urban regions, and consumption will grow by as much as 30%.
- Consumption will be 40% greater than known water sources.

It is imperative that we re-think approaches to water management, and emphasize on efficiency.

Accelerating Growth and Urbanization

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A NRW reduction program is meant to reduce wastage on physical losses and increase sales/revenue, but subsequent to a successful NRW reduction program are the following benefits:

- There will be reduced stress on water resources from over- extraction.
- The energy and resources required to run a water system will be less if the water system is intact.
- An efficient water distribution system stabilizes water supply.
- An efficient water distribution system will improve water quality.

Successful NRW reduction allows the expansion of water services without the need to over-harvest from water sources.

Why Reduce NRW?

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KEY MESSAGES

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THE MANILA WATER STORY

A Growth Story of a Successful Public-Private Partnership in Asia

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BRIEF HISTORY

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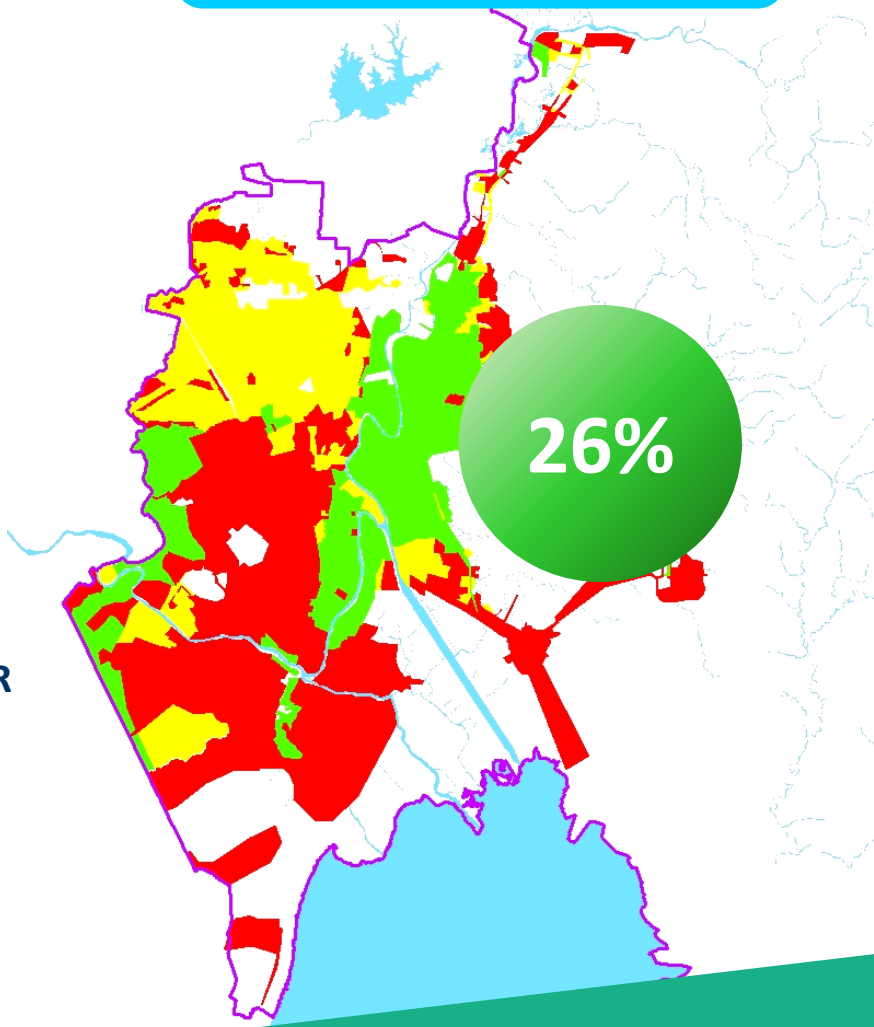
WATER SUPPLY AVAILABILITY:
3.1 million customers

LEAKS

ILLEGAL CONNECTIONS

LOW WATER PRESSURE TO NO WATER

POOR CUSTOMER SERVICE



LOW SEWER COVERAGE (only 3% coverage)

Pre-1997

Challenging Conditions Before the PPP

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City	Population (million)	Water Availability (hrs/day)	Water Coverage (% of pop)	Non-Revenue Water (% of prod)	Staff/1000 Connections
Manila East (1996)	**3.1**	**16**	**58**	**63**	**9.8**
Singapore	3.0	24	100	7	2.0
Hong Kong	6.3	24	100	36	2.8
Seoul	10.6	24	100	35	2.3
Kuala Lumpur	1.4	24	100	36	1.4
Bangkok	7.3	24	82	38	4.6

Metro Manila vs. Key Asian Cities

Metropolitan Waterworks and Sewerage System (MWSS)

Maynilad

Metro Manila's West Zone

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Metro Manila's East Zone

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Expand Service Coverage

Improve Service Delivery

Increase Operating Efficiency

Objectives of The 1997 Public-Private Partnership

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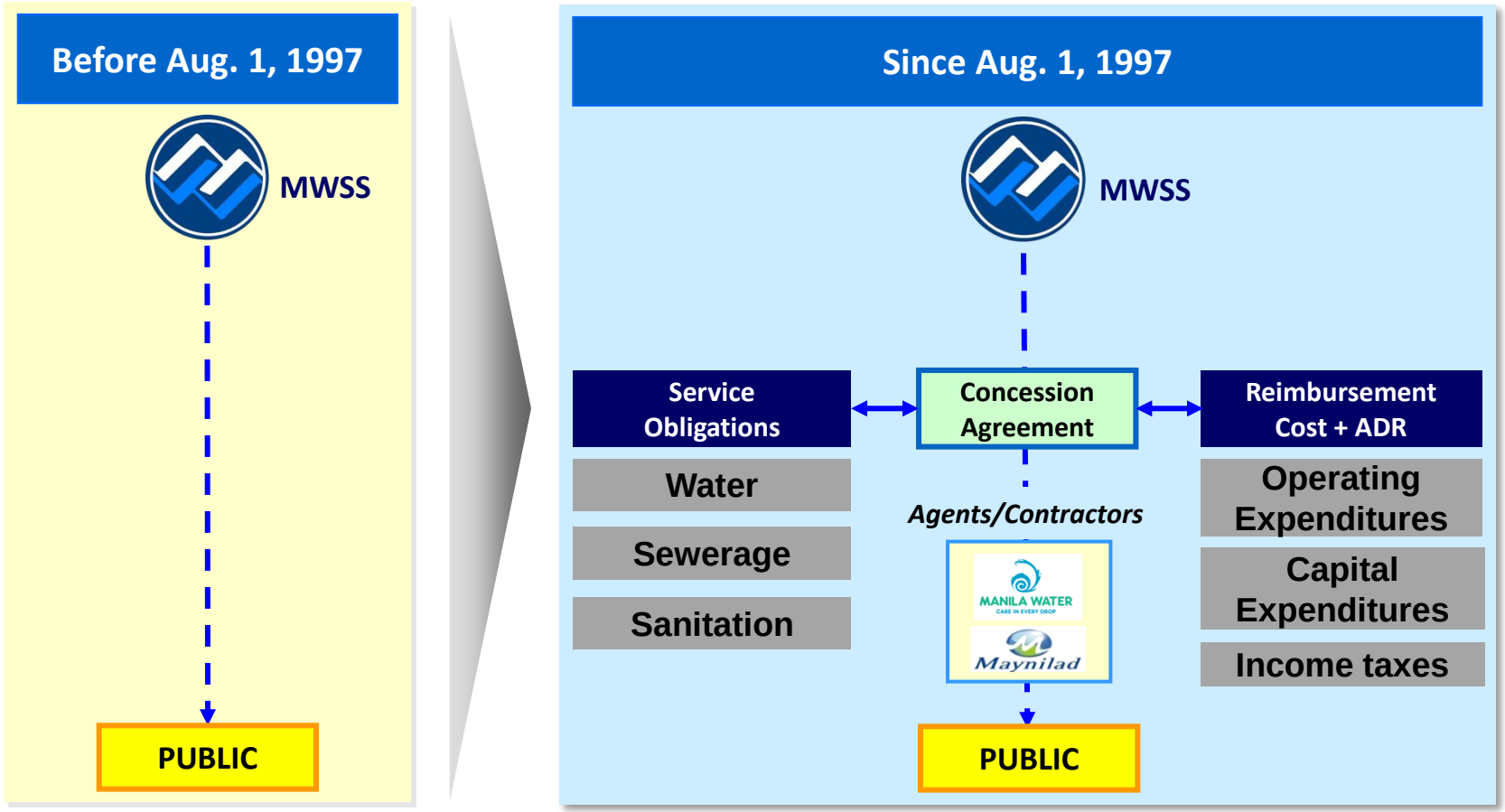

Concession Framework

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Asset Management Obligations

"operate, maintain, renew"

Meet Service Obligations

"provision of water supply and sewerage services"

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COMPANY PROFILE

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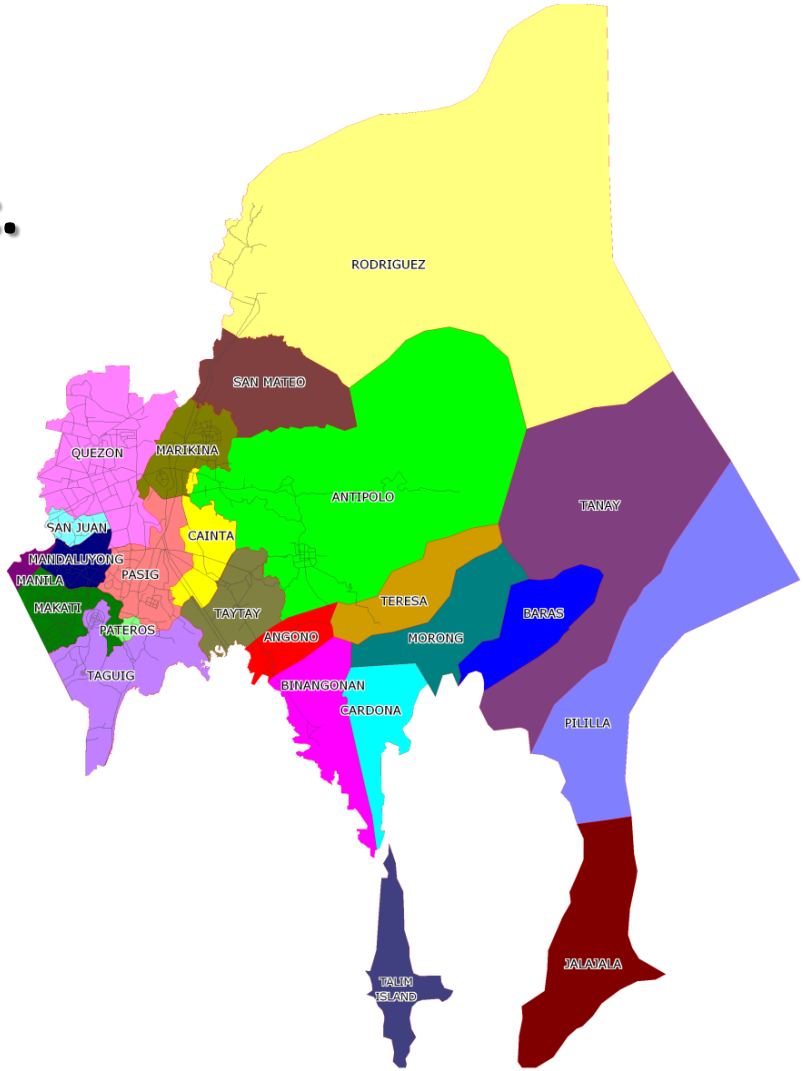
The Manila Water Company, Inc.

East Zone Concession Area

- Covers 23 cities and municipalities
- Includes major business centers in Metro Manila
- Spans 1,400 square kilometers
- Serves 6.3 million customers



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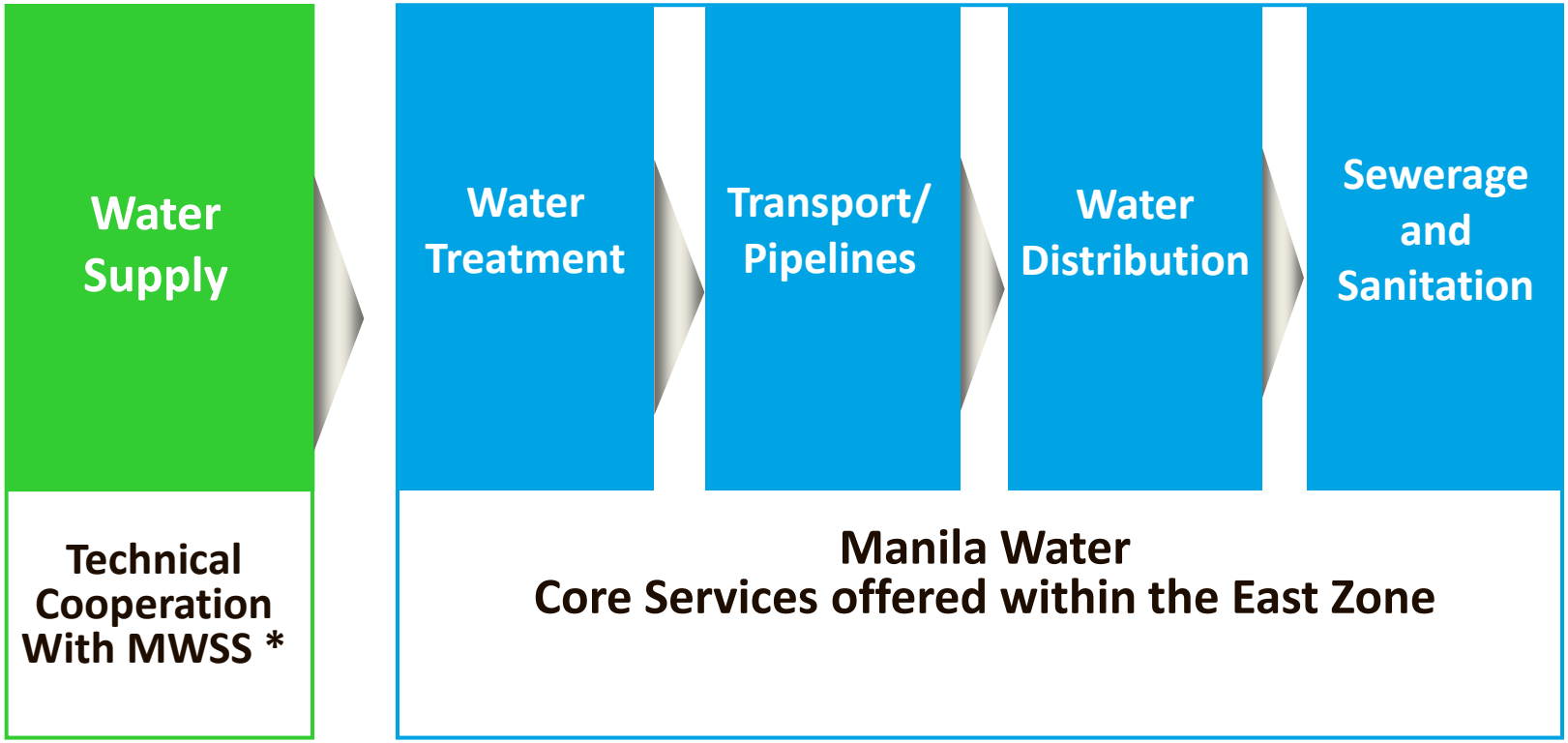
Manila Water covers the entire water value chain



* *Metropolitan Waterworks and Sewerage System*

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KEY MESSAGES

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GROWTH DURING THE PUBLIC PRIVATE PARTNERSHIP

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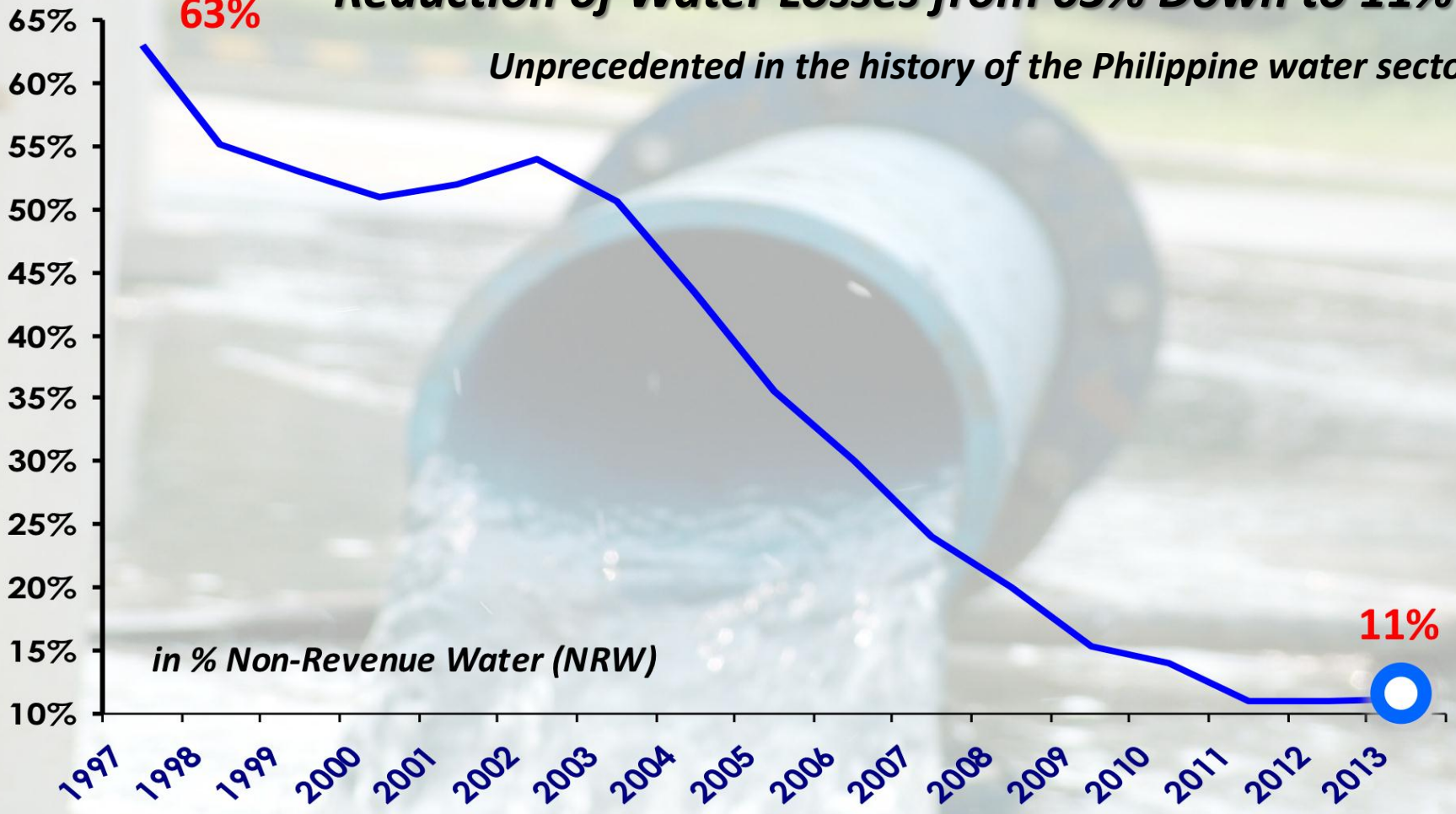
Reduction of Water Losses from 63% Down to 11%

Unprecedented in the history of the Philippine water sector



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More Water Delivered to Customers

1,329 Million Liters per Day

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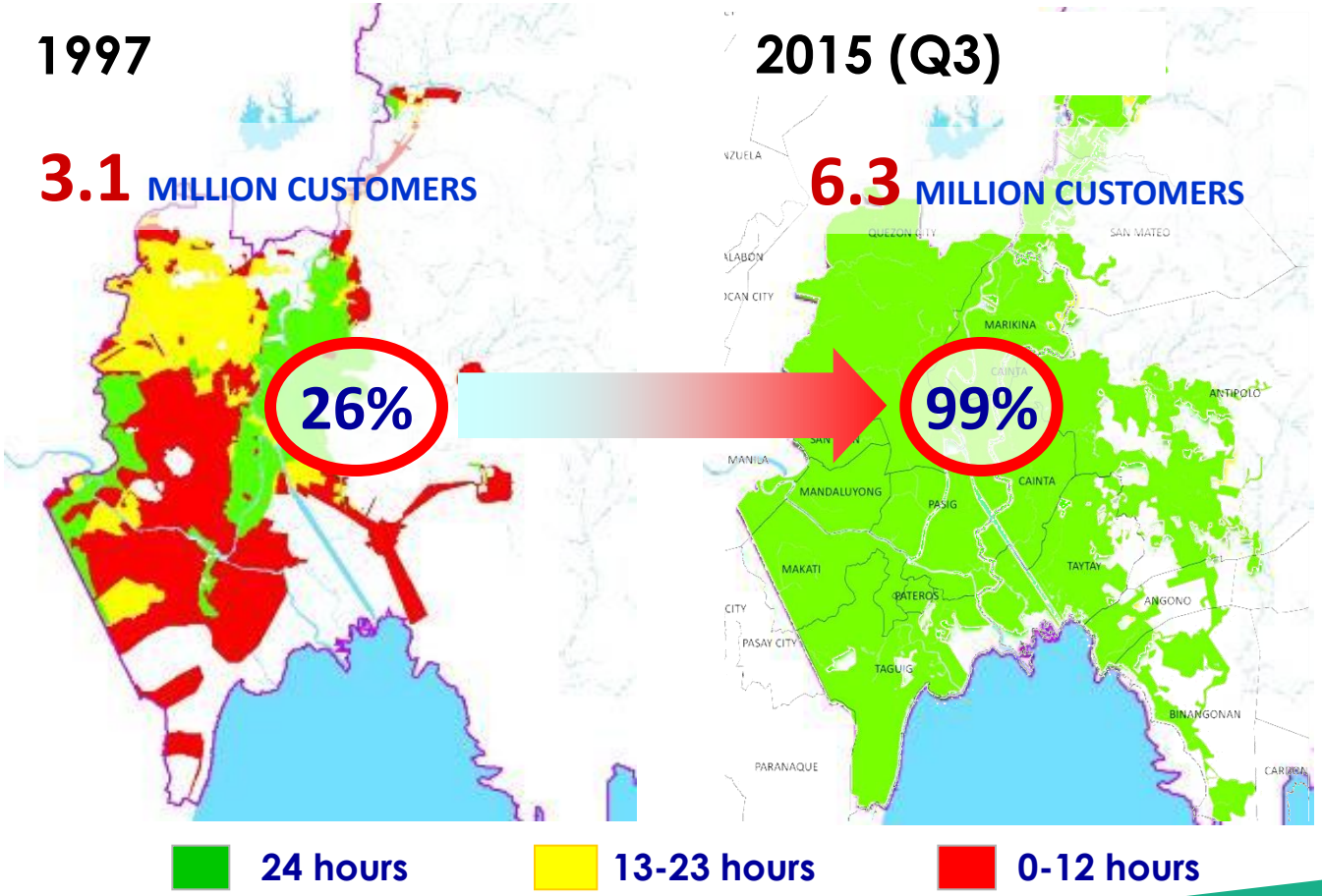
Results of Public-Private Partnership

24/7 Water Availability



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City	Population (million)	Water Availability (hrs/day)	Water Coverage (% of pop)	Non-Revenue Water (% of prod)	Staff/1000 Connections
Manila East (1996)	3.1	16	58	63	9.8
Manila East (2014)	6.3	24	99	11	1.4
Singapore**	4.0	24	100	5	2.0
Hong Kong*	6.9	24	100	25	2.3
Seoul*	10.3	24	100	25	1.4
Kuala Lumpur*	1.4	24	100	43	1.4
Bangkok**	7.6	24	100	37	3.6

**ADB Water in Asian Cities 2004*
***ADB City Water Profiles 2001*

Metro Manila vs. Key Asian Cities

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MANILA WATER
TOTAL SOLUTIONS

BORACAY WATER
A MANILA WATER
PHILIPPINE VENTURES COMPANY

CEBU WATER
CEBU MANILA WATER
DEVELOPMENT, INC.

CLARK WATER
A MANILA WATER
PHILIPPINE VENTURES COMPANY

LAGUNA WATER
A MANILA WATER
PHILIPPINE VENTURES COMPANY

ZAMBOANGA WATER
A MANILA WATER
PHILIPPINE VENTURES COMPANY

MANILA WATER
PHILIPPINE VENTURES

Expansion in the Philippines

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MANILA WATER
ASIA PACIFIC

1. Vietnam Representative Office
2. Myanmar Representative Office
3. Indonesia Representative Office

TDW
Better Service for Life

Saigon Water

ASIA WATER
NETWORK SOLUTIONS

WASS
CÔNG TY CỔ PHẦN CẤP NƯỚC KÊNH ĐÔNG
KENH DONG WATER SUPPLY JOINT-STOCK COMPANY

Expansion in the Asia-Pacific Region

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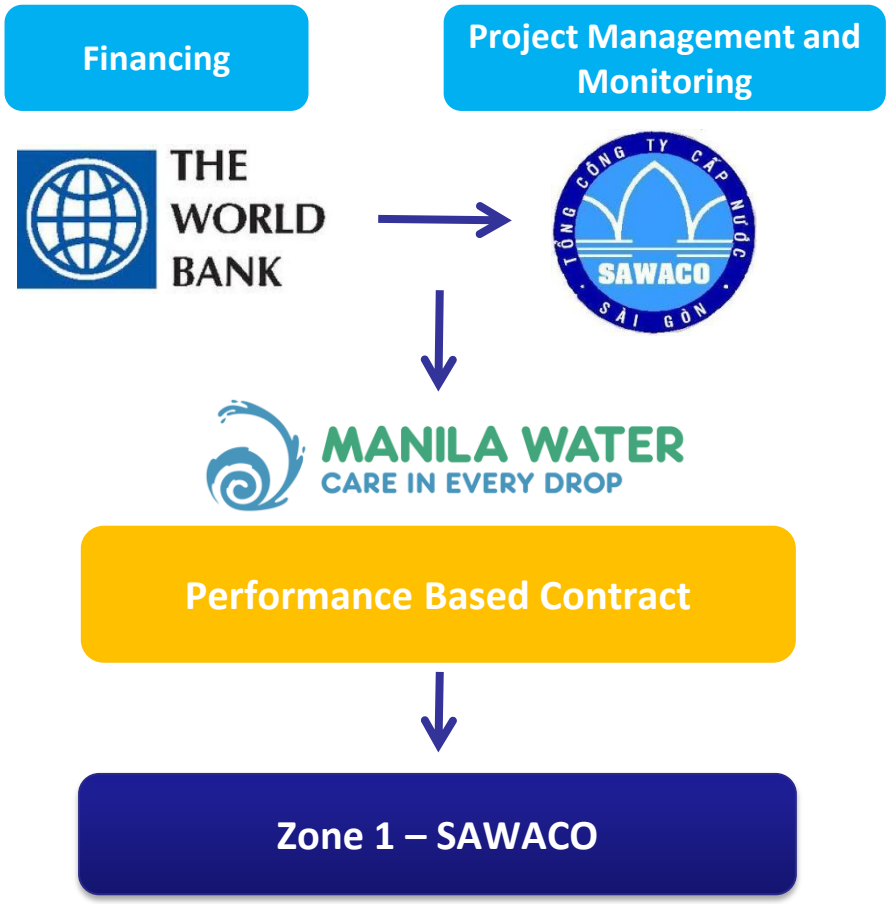
Manila Water in Vietnam

- To date, Manila Water has **invested more than USD 100M** in the Vietnam Water Industry
- Currently, Manila Water has **4 subsidiaries and a Country Office operating** in Ho Chi Minh City
- Manila Water has a **long term aspiration** to further expand its investments in the Vietnam water space.

PROJECT FRAMEWORK



- Vietnam Urban Water Supply Development Project
- Manila Water's first performance-based leakage reduction and management services contract outside the Philippines
- The project aims to reduce water losses by 10 percentage points which can serve as additional supply to the city.

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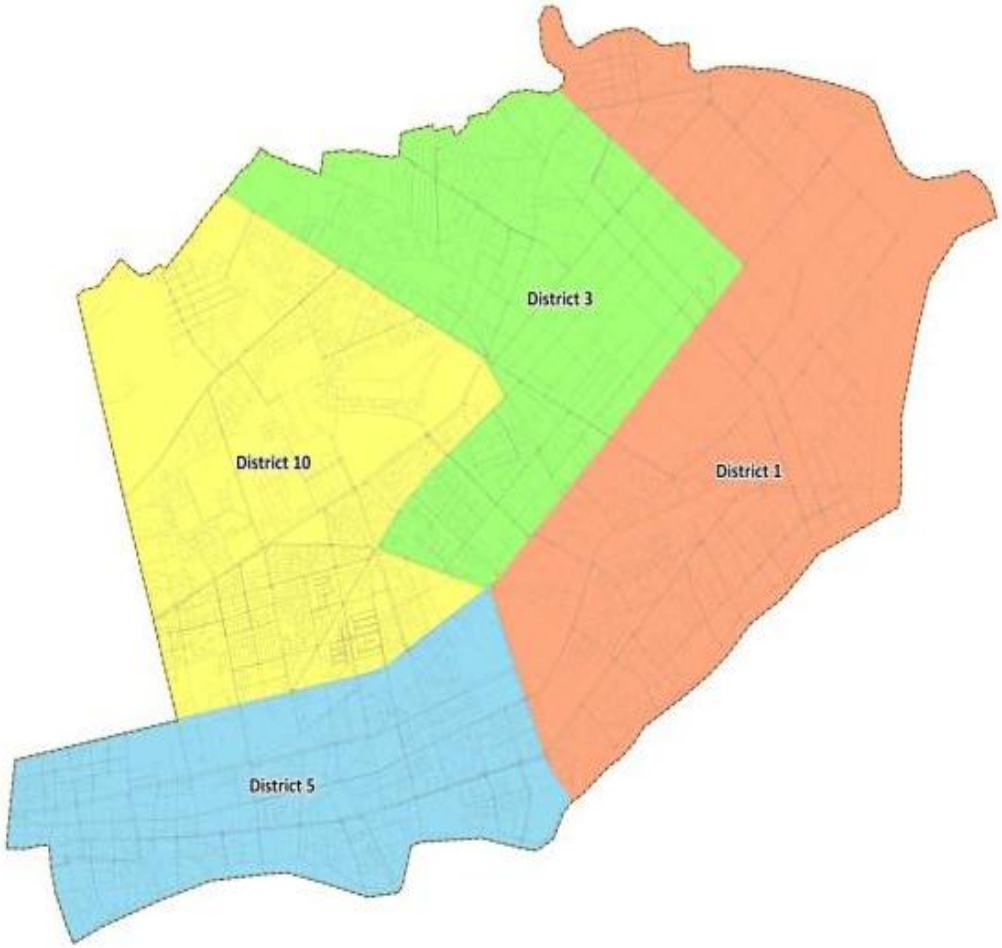
4
districts

145k+
WSCs

119
Proposed # of DMAs



23
km^2

835
km of laid pipes

37.5
TCM/day min. recoverable vol. target

Zone 1 Profile

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OBJECTIVES

To reduce NRW in HCMC – Zone 1

To implement a management program to maintain NRW gains after contract expiry

Contract Price	**15 M USD + contingency**
Scope of Work	**Preliminary Works** •DMA Establishment •System Expansion Works •Emergency & Unforeseen Works **Leakage Reduction / Management** •Leak Detection •Leak Repair •DMA Control & Monitoring
Duration	**5 years – DMA Establishment / Leakage Reduction** **1 year – Maintenance Period**

Contract Scope

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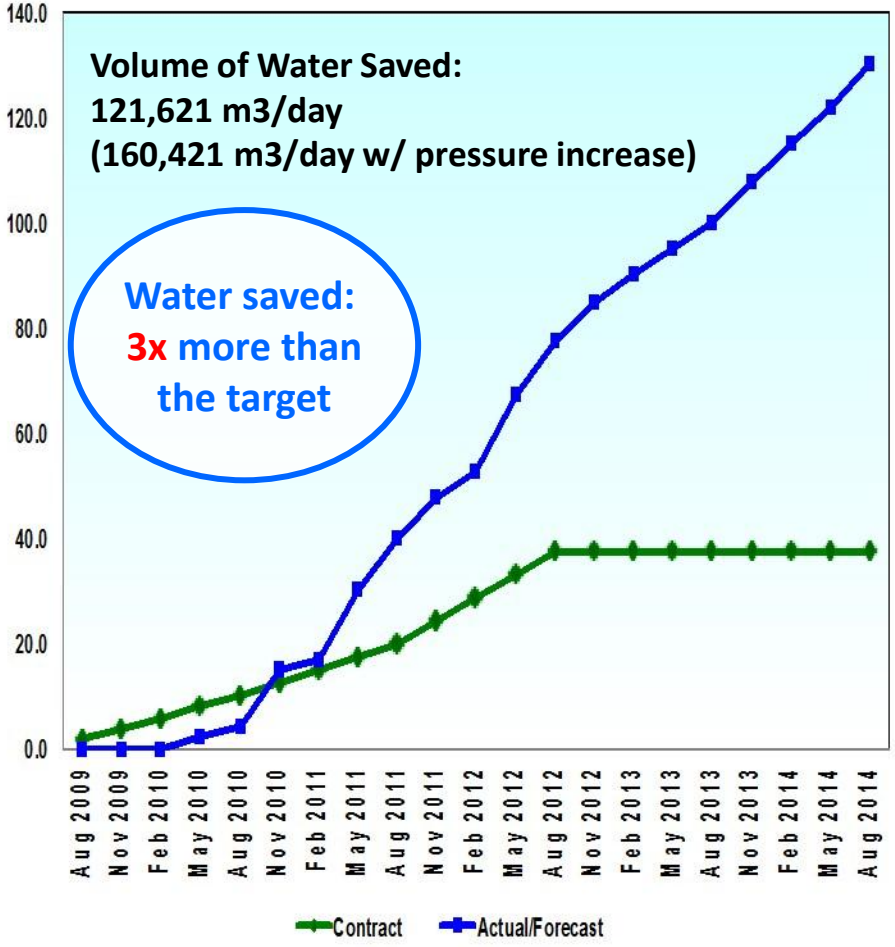
Result of the Performance-based NRW Reduction Project



Over 48 Olympic size swimming pools of water saved every single day!

Performance vs. Contract Targets

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Manila Water – Mitsubishi Corporation

Results of Pilot DMA Project in Yangon City

Manila Water's Entry into Yangon

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- Memorandum of Understanding (MOU) signed in March 2014, with three years effectivity.
- The MOU covers four phases:
  - Phase 1: Feasibility Study of Supply Zone 3, including Mayangone, Insein, South Okkalappa, and Kamaryut Townships
  - Phase 2: Pilot DMA Project in the areas of South Okkalappa (Block 14-2) and Insein (Htan Pin Gone)
  - Phase 3: Submission of proposal to scale-up non-revenue water efforts/network improvement activities
  - Phase 4: Submission of proposal for possible city-wide concession of Yangon City

Insein Township Map

South Okkalappa Township Map

YCDC, Manila Water, And Mitsubishi Partnership

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OLD PIPES

OLD WATER METER

LEAKS

DMA Block 14-2 Waterloss: 55.97%

DMA Htan Pin Gone Waterloss: 56%

YCDC, Manila Water, And Mitsubishi Partnership

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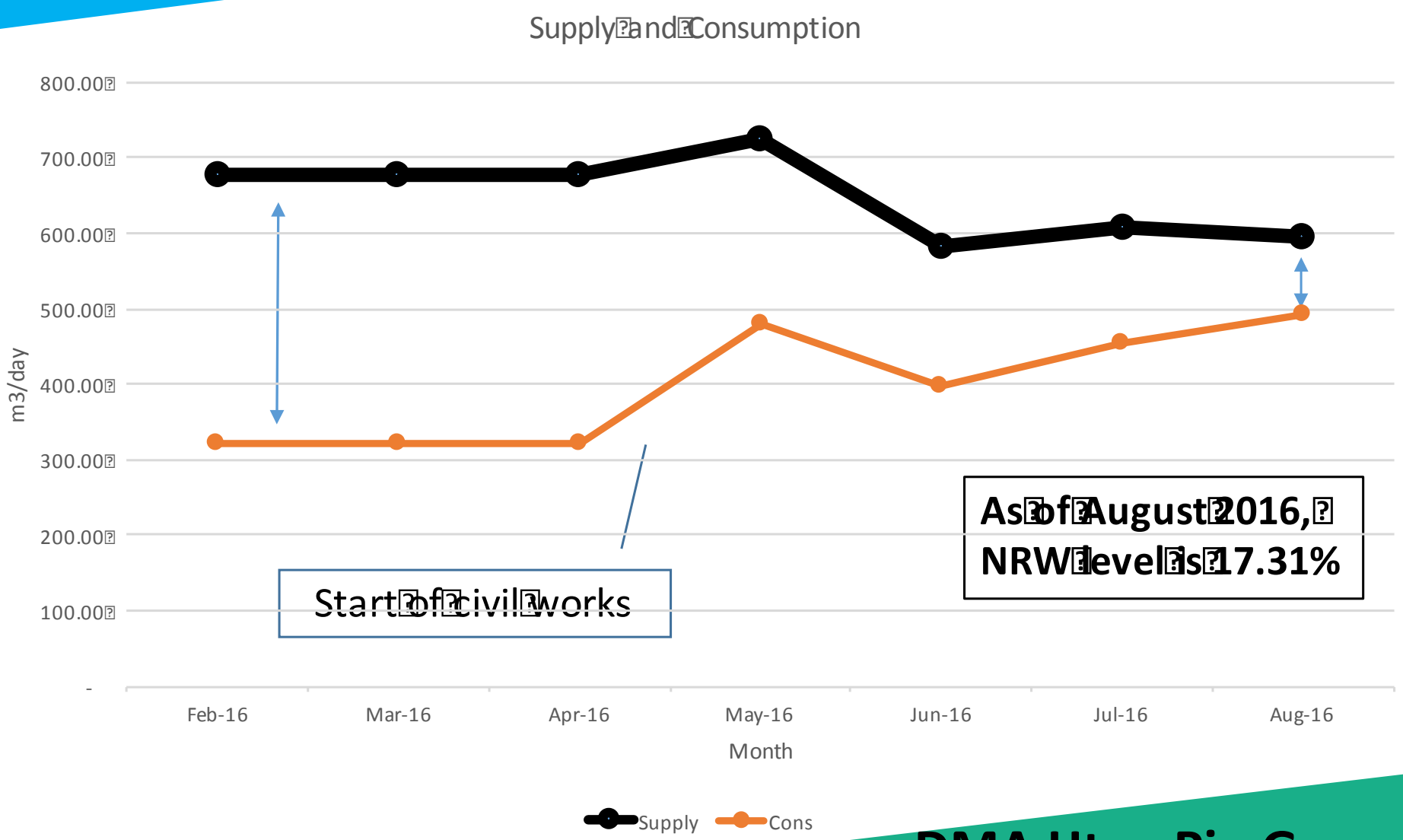

DMA Htan Pin Gone: Supply and Consumption Trend

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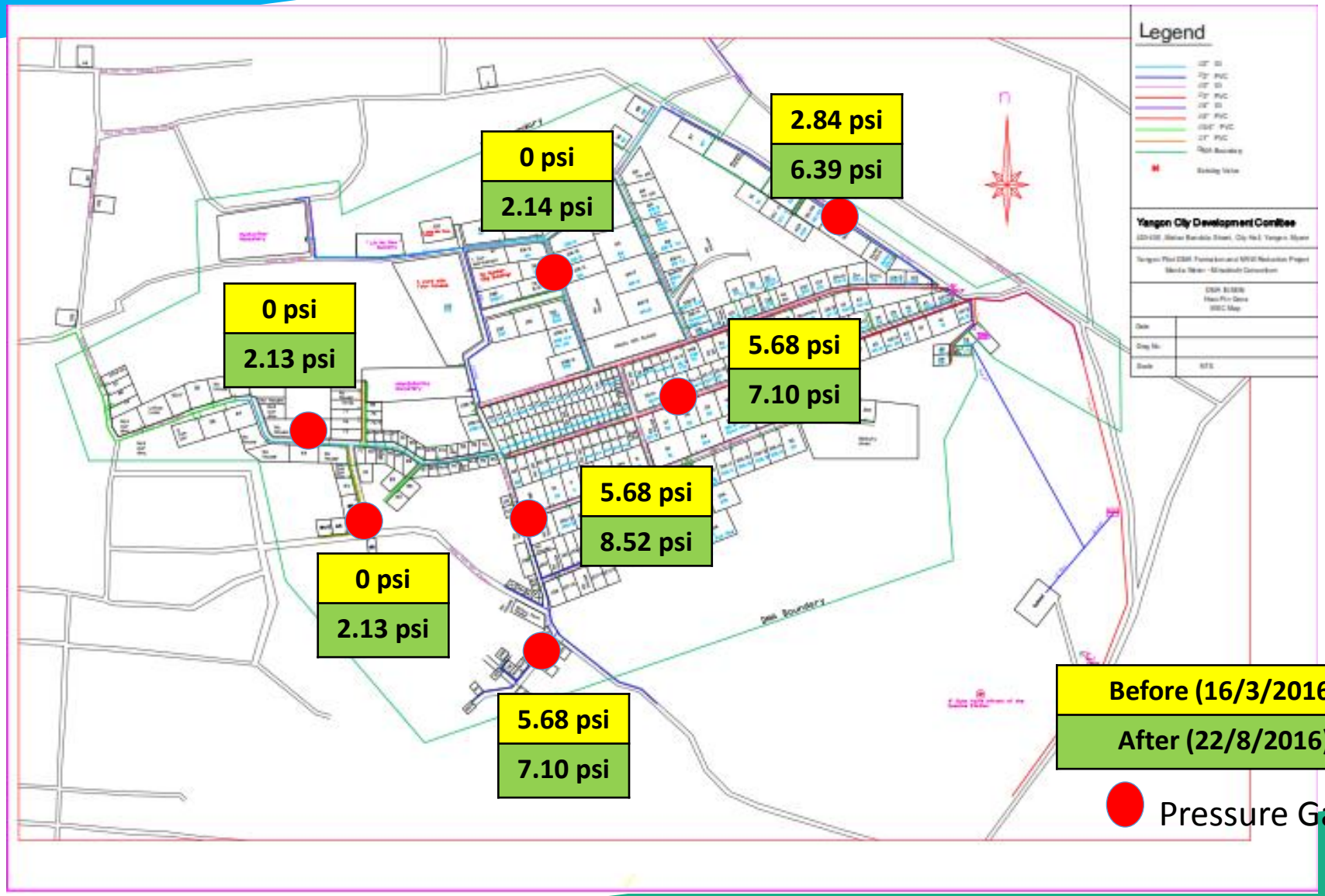
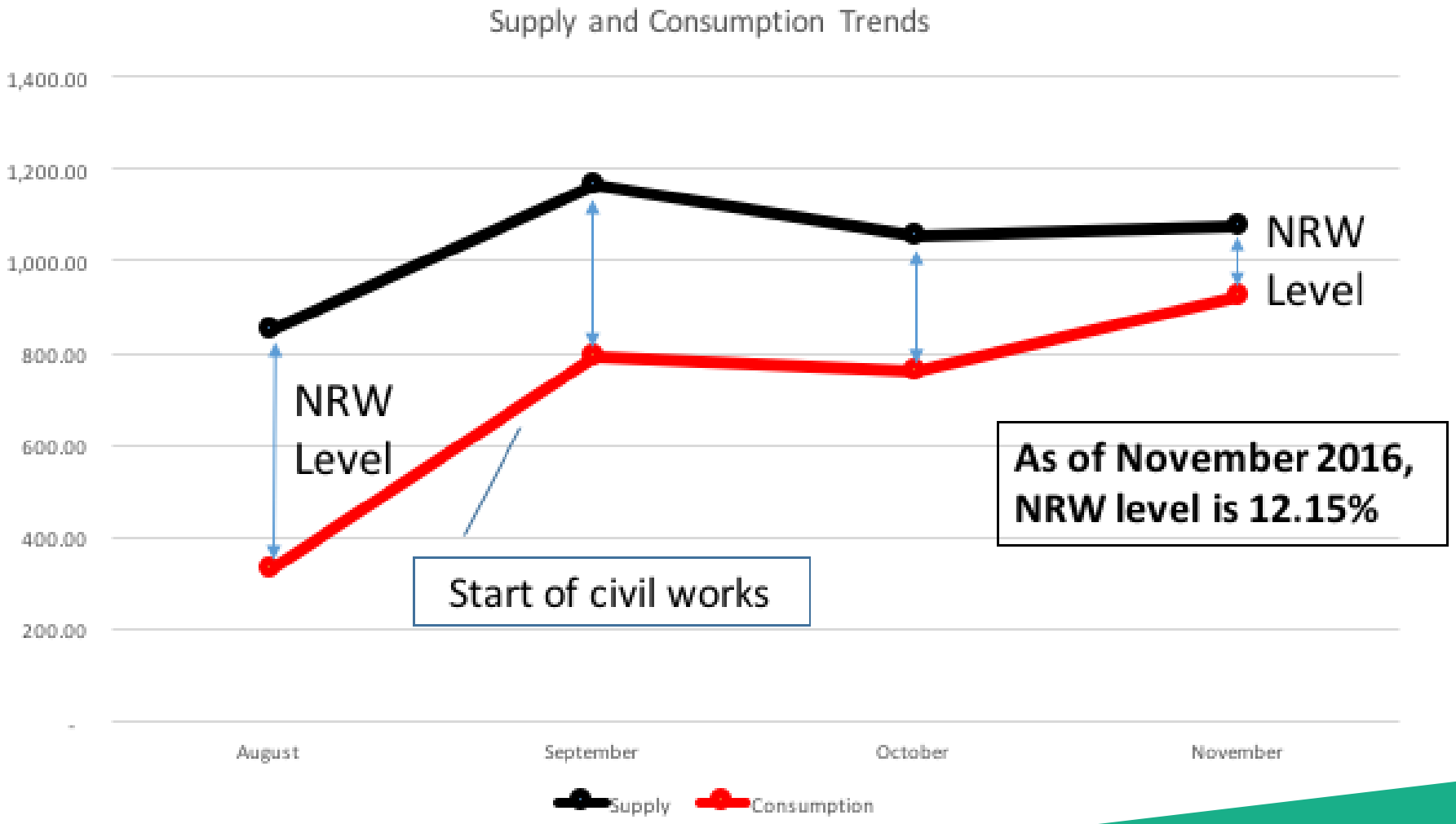


DMA Htan Pin Gone: Pressure Level



DMA Block 14-2
Supply and Consumption Trend

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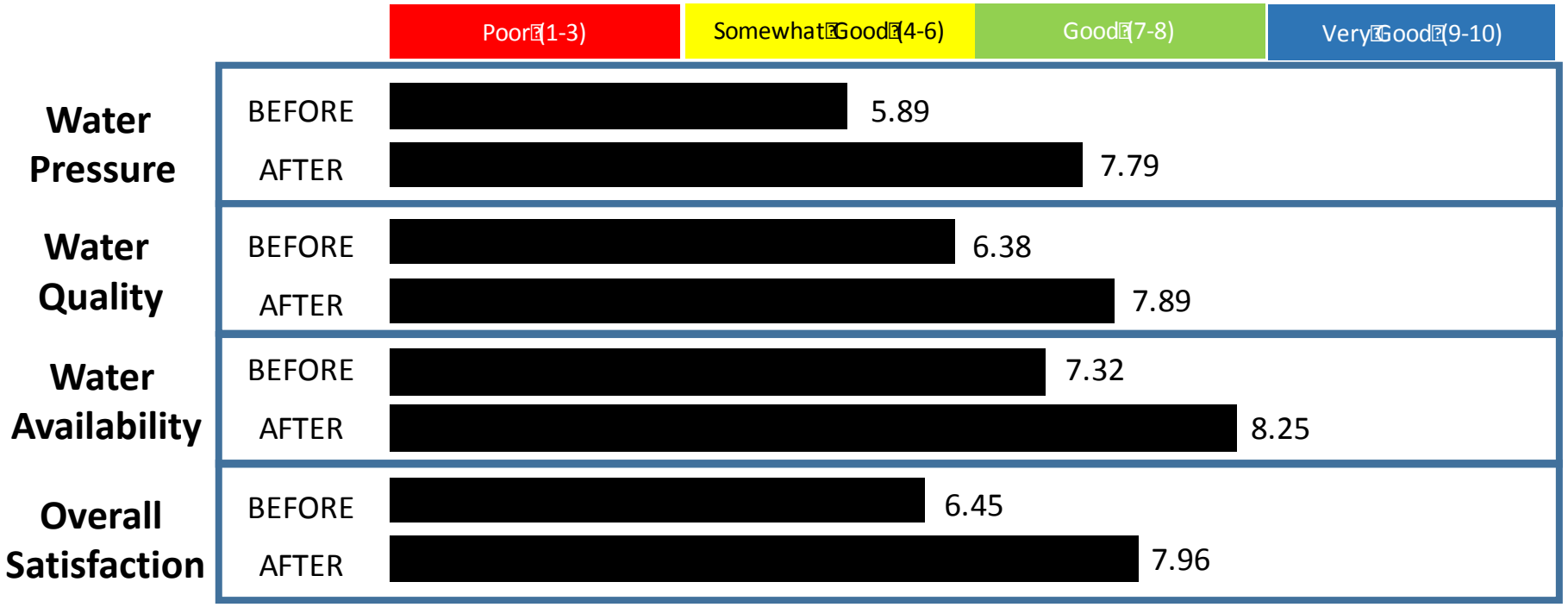
CUSTOMER SATISFACTION RESULTS

DMA Htan Pin Gone, Insein Township | Sept. 22, 2016 | Sample Size = 53



DMA Htan Pin Gone
Customer Satisfaction Level

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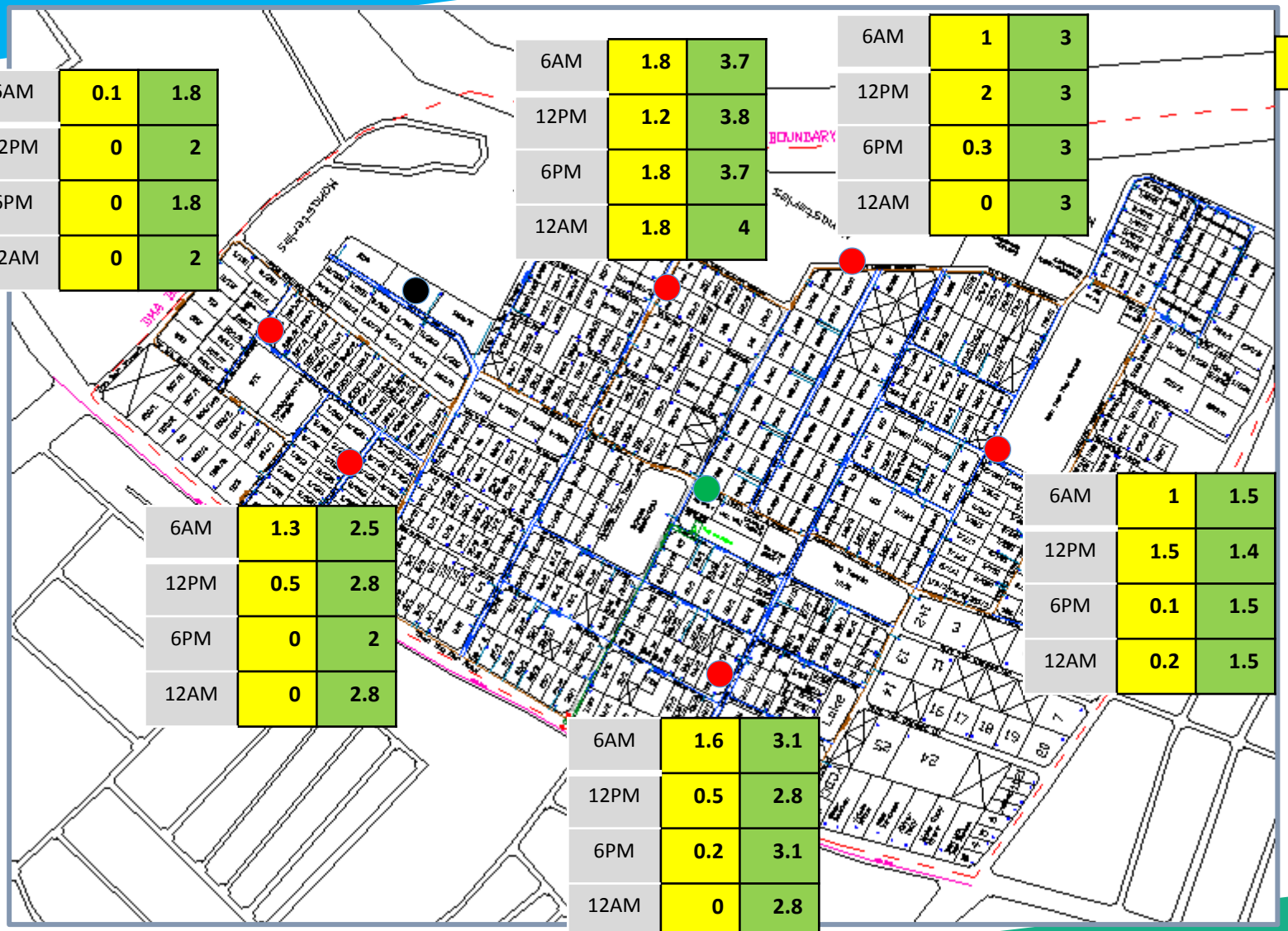

6AM	0.1	1.8
12PM	0	2
6PM	0	1.8
12AM	0	2

6AM	1.8	3.7
12PM	1.2	3.8
6PM	1.8	3.7
12AM	1.8	4

6AM	1	3
12PM	2	3
6PM	0.3	3
12AM	0	3

6AM	1.3	2.5
12PM	0.5	2.8
6PM	0	2
12AM	0	2.8

6AM	1	1.5
12PM	1.5	1.4
6PM	0.1	1.5
12AM	0.2	1.5

6AM	1.6	3.1
12PM	0.5	2.8
6PM	0.2	3.1
12AM	0	2.8

NOP	OP

Non-operational Pump vs. Operational Pump

Pressure Gauge

Line Meter

DMA Block 14-2: Pressure Level

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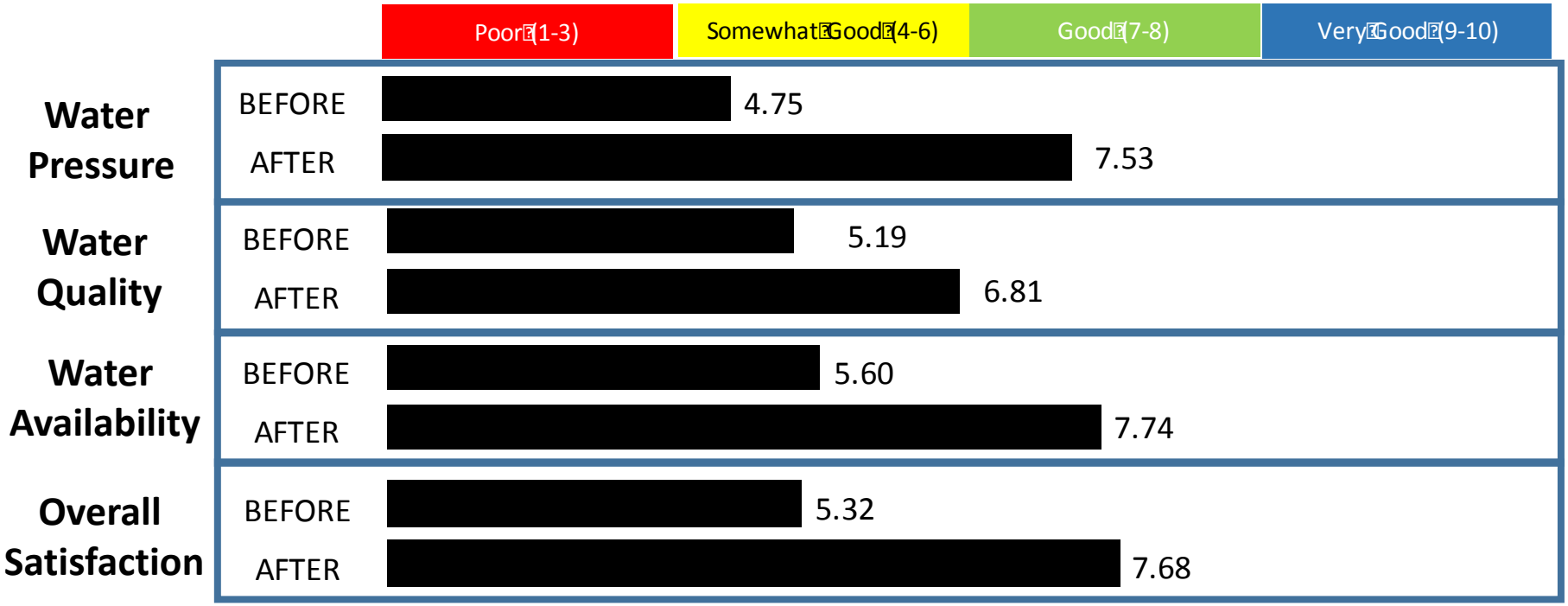
CUSTOMER SATISFACTION RESULTS

DMA Block 14-2, S. Okkalapa Township | Nov. 22, 2016 | Sample Size = 53



DMA Block 14-2
Customer Satisfaction Level

CUSTOMER SURVEY ON ACCEPTABILITY OF HIGHER TARIFF

DMA Htan Pin Gone and Block 14-2 | Dec. 26-27, 2016 | Sample Size = 50

For the customers, what are the characteristics of an ideal water services?	
24/7 Water availability (water supply is available throughout day and night)	**94%**
Strong Water Pressure (No need for water pump)	**92%**
Potable Water (Water from the tap is safe for drinking)	**90%**
Excellent customer service from water provider	**84%**
Water is clear from impurities	**84%**

CONCLUSION:

Almost 9 out of every 10 people are willing to pay for higher water tariff for as long as service obligations are fulfilled and the system is improved

If the ideal characteristics are attained, are the customers willing to pay higher tariff equivalent to South East Asian Average (USD 0.5)		
Willing to pay USD 0.5 per cubic meter	2%	Willing to pay higher water tariff 86%
Wiling to pay USD 0.5 per cubic meter but tariff increase should be gradual	24%	
Wiling to pay USD 0.5 per cubic meter but service improvements should come first	28%	
Wiling to pay higher tariff rate but not as high as USD 0.5 per cubic meter (average response is MMK 200 per cubic meter)	32%	
Not willing to pay higher water tariff	14%	Not willing to pay higher water tariff 14%
TOTAL	100%	

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- There is commonality in the challenges that the Metro Manila (1997) faced and the challenges that Ho Chi Minh and Yangon (at present) is facing with its respective water infrastructures.

- In Manila, PPP served as springboard for transformation of the water sector.

- There are distinct characteristics of each and every service area that needed to be studied in order to address and arrest water losses.

- NRW reduction effort should be a combination of both asset upgrade through investment and systemic, enterprise-wide capacity-building.

- The results of the Pilot DMA project prove that Yangon's NRW can be addressed through established best practices while taking into account local peculiarities.

- **We are confident that with the right regulatory framework, there can be significant investment into the sector and NRW reduction, in particular. You can bring more water to the citizens long before any of the much needed new supplies come on line.**

Insights