NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY

Volume 2: Philippine Water Supply and Sanitation Master Plan

# National Capital Region Water Supply and Sanitation Databook and Regional Roadmap

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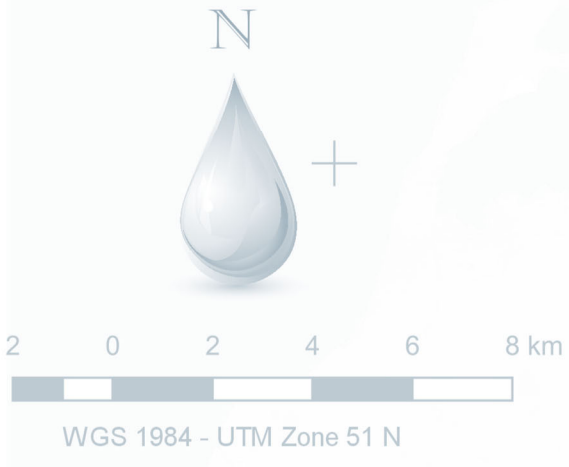

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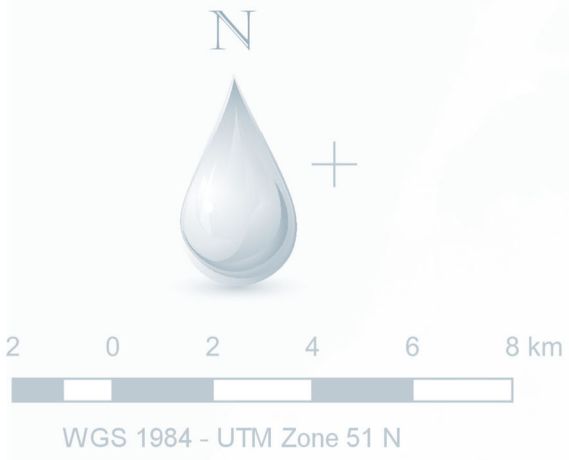
# Acronyms

| | |
|---|---|
| ADB | Asian Development Bank |
| AWWA | American Water Works Association |
| BP | Business Plan |
| BV | Billed Volume |
| CA | Concession Agreements |
| CapEx | Capital Expenditure |
| DBP | Development Bank of the Philippines |
| DENR | Department of Environment and Natural Resources |
| DPWH | Department of Public Works and Highways |
| ESC | Essential Services Commission |
| FIES | Family Income and Expenditure Survey |
| FSA | Flexible Spending Account |
| IFC | International Finance Corporation |
| IPART | Independent Pricing and Regulatory Tribunal |
| LBP | Land Bank of the Philippines |
| LGU | Local Government Unit |
| LWUA | Local Water Utilities Administration |
| MMEIRS | Metro Manila Earthquake Impact Reduction Study |
| MRH | Medium Rise Housing |
| MTSP | Manila Third Sewerage Project |
| MWCI | Manila Water Company, Inc. |
| MWHCI | Maynilad Water Holding Company, Inc. |
| MMWMP | Metro Manila Wastewater Management Project |
| MWSI | Maynilad Water Services Inc. |
| MWSS | Metropolitan Waterworks and Sewerage System |
| MWSS RO | Metropolitan Waterworks and Sewerage System Regulatory Office |
| NCR | National Capital Region |
| NEDA | National Economic and Development Authority |
| NEXI | Nippon Export Investment Insurance |
| NRRI | National Regulatory Research Institute |
| NRW | Non-Revenue Water |
| OFWAT | Water Services Regulation Authority |
| PNSDW | Philippine National Standards for Drinking Water |
| PSA | Philippine Statistics Authority |
| PWWA | Philippine Water Works Association Inc. |
| ROA | Return of Assets |
| ROE | Return on Equity |
| ROW | Right-of-Way |
| RPWSIP | Rizal Province Water Supply Improvement Project |
| RR | Revenue Regulations |
| UN-OCHA | United Nations Office for the Coordination of Humanitarian Affairs |
| UTM | Universal Transverse Mercator |
| WGS | World Geodetic System |
| WS | Water Sales |
| WSC | Water Service Connection |
| WSP | Water Service Provider |
| WSS | Water Supply and Sanitation |
| WTP | Water Treatment Plant |



# Units

| | |
|---|---|
| B | billion |
| ¥ | Japanese yen |
| < | less-than sign |
| M | million |
| MLD | million liters per day |
| > | greater-than sign |
| % | percent |
| PhP | Philippine peso |
| $ | US dollars |

0°0.000′
80°0.000′W
160°0.000′W
120°0.000′E
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60°0.000′N
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Kalookan City
Valenzuela
Malabon
Navotas
Quezon City
Marikina
Manila
San Juan
Mandaluyong
Pasig City
Makati City
Pateros
Pasay City
Taguig
Para◆aque
Las Pi◆as
Muntinlupa

N

2 0 2 4 6 8 km

WGS 1984 - UTM Zone 51 N

# 17

# National Capital Region

NCR

# Background

## The provision of water supply and sanitation (WSS) facilities in the National Capital Region (NCR) has been the responsibility of the Metropolitan Waterworks and Sewerage System (MWSS),

a government-owned corporation. WSS services have been outsourced to two private concessionaires, Maynilad Water Services, Inc. (MWSI), and Manila Water Company Inc. (MWCI). Two concession agreements (CA), valid for 25 years, were signed 1997 in the hope that water supply privatization would avert an impending water crisis in the region. In 2009, these agreements were extended to another 15 years, i.e., until 2037.

Presently, the service areas of Maynilad and Manila Water do not cover the entire NCR, but these include portions of areas on its outskirts such as those in Rizal and Cavite.

Since the start of their concession agreements, the two water companies have significantly increased the region's access to safe water. In 2015, it was recorded that the two companies served more than 90% of their 15 million users.

With the extension of their contracts until 2037, the water supply and sanitation needs of NCR may be safely assumed as "adequately covered". This assumption led government policy planners, regional stakeholders and the Consulting team to a decision to defer a regional and planning workshop with respect to the preparation of a roadmap and national master plan. Key interviews and focus group discussions with officials and representatives of MWSI, MWCI, and MWSS, however, have been undertaken to gather information on their existing operations and future plans to improve and expand WSS in their respective service areas.

Data and other information in the succeeding sections of this report were heavily based on the data the stakeholders had given. The structure and outline of the roadmap for NCR and for the other administrative regions may also differ.

An infographic on page 8 shows the demographic and socio-economic profile of NCR. It was created by the United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA).

# Sector Performance

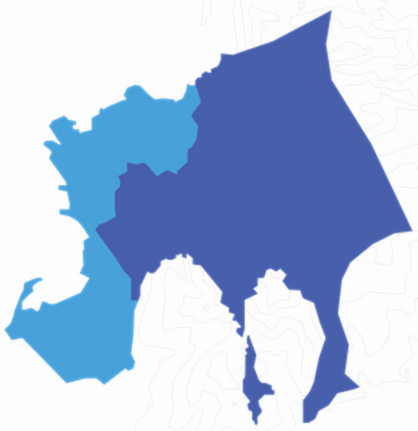
The region's water sector is covered by the Water Security Legacy Roadmap of MWSS.

The MWSS concessionaires provide WSS services in NCR and parts of Region IV-A. Figure 1 lists their respective service areas.

### Maynilad Water Services Inc.:

NCR:
Makati (southwestern portion), Manila (excluding Santa Ana and San Andres), Caloocan, Las Piñas, Malabon, Muntinlupa, Navotas, Pasay, Parañaque, Valenzuela, and Quezon City (northern and western portion).

Cavite:
Bacoor, Cavite City, Imus, Kawit, Noveleta, and Rosario.



### Manila Water Company Inc.:

NCR:
Makati (except its southwestern portion), Mandaluyong, Manila (southeastern portion), Marikina, Pasig, Pateros, Quezon City (central and eastern parts), San Juan, and Taguig.

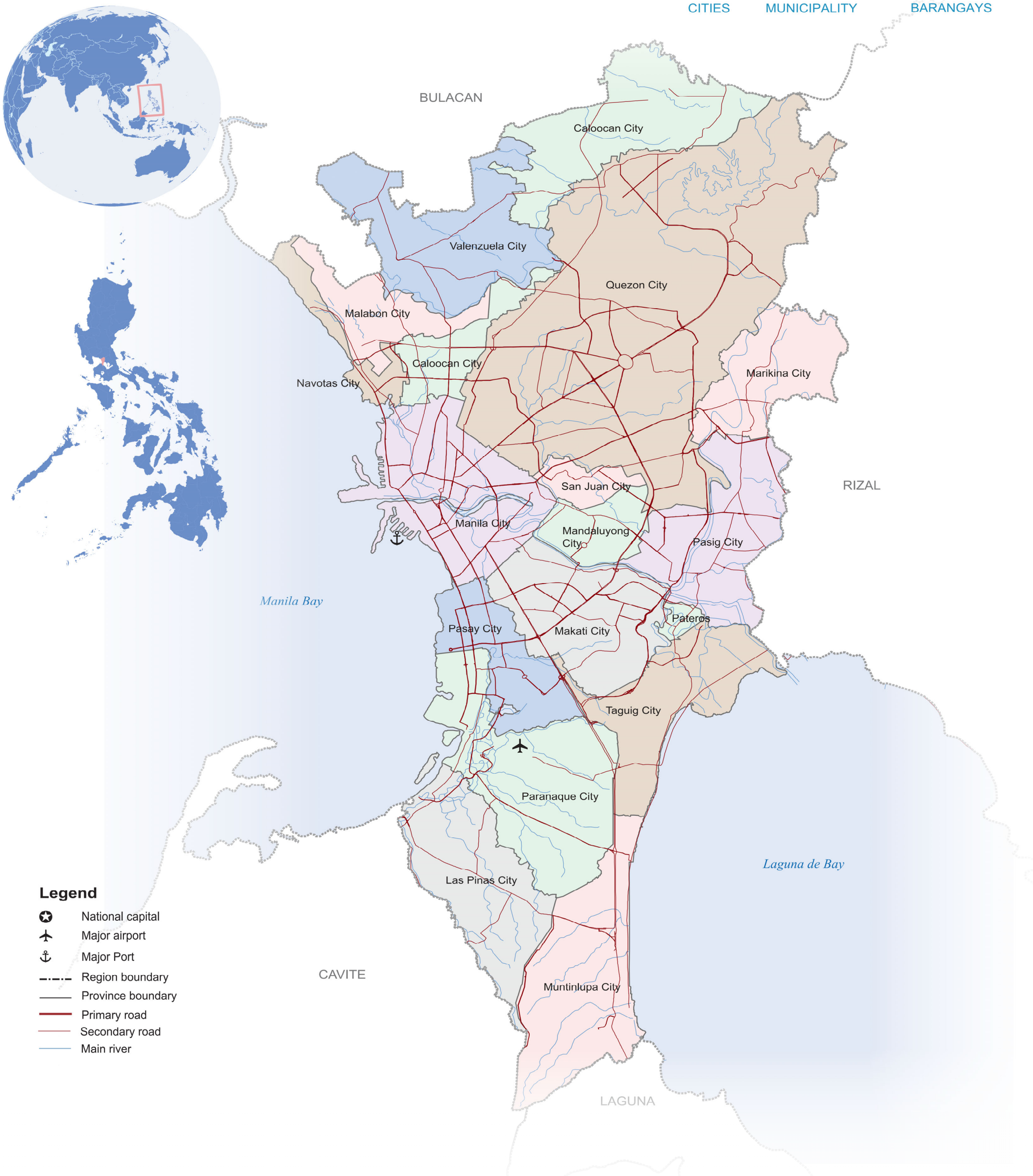
Rizal:
Angono, Antipolo, Baras, Binangonan, Cainta, Cardona, Jalajala, Morong, Pililla, Rodriguez, San Mateo, Tanay, Taytay, and Teresa.

**Figure 1: Areas Covered by MWSS Concessionaires in NCR and Region IV-A**

# Philippines: National Capital Region (NCR) Profile

The National Capital Region (NCR), also known as Metropolitan Manila, is composed of 16 cities and 1 municipality grouped into four districts. It is considered to be the political, economic and social center of the Philippines. NCR is the smallest and most densely populated region in the country. It is bordered by Region III to the north and Region IV-A in the south and east. Manila Bay lies to the west and Laguna de Bay to the south-east.

| 16 | 1 | 1,706 |
|---|---|---|
| CITIES | MUNICIPALITY | BARANGAYS |




*The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.*

**Creation date:** January 2017 **Sources:** PSA, DSWD (NHTS), DOH, OCD/NDRRMC, DEPED, FNRI, Project NOAH, NAMRIA, GADM, SRTM **Feedback:** addawe@un.org, mendoza1@un.org, aportol@un.org ww

OCHA

## POPULATION

*NCR population*

**12.88** million

*NCR households*

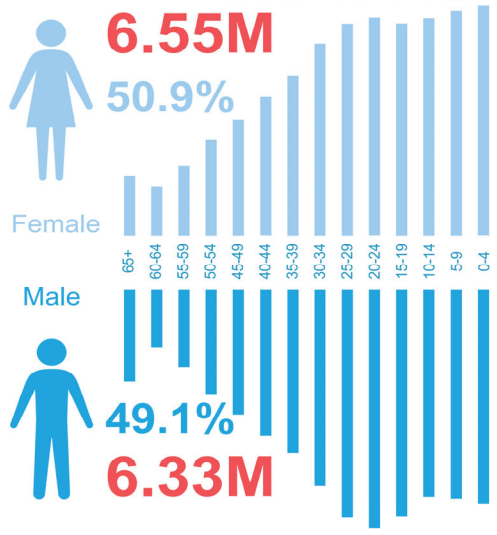
**3.10** million

Population statistics trend

**12.88 M** *2015 Census*

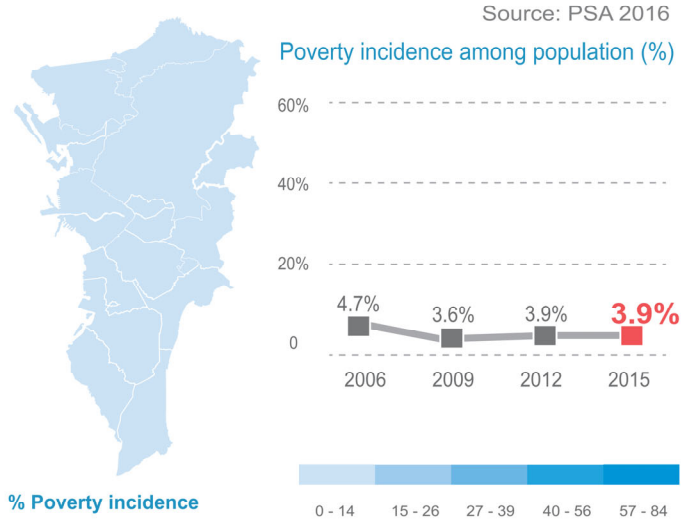
**11.81 M** *2010 Census*

Source: PSA 2015 Census

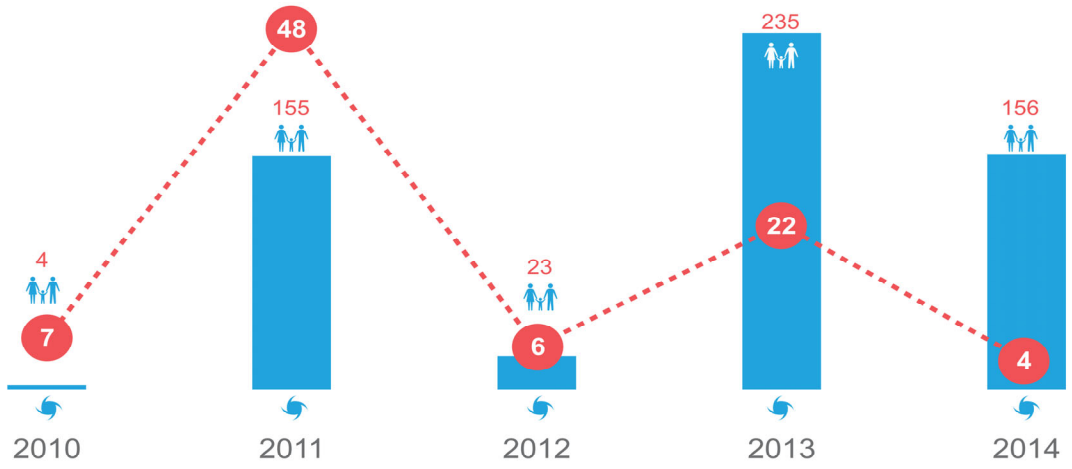



## POVERTY

Source: PSA 2016




## NATURAL DISASTERS




Source: OCD/NDRRMC

Number of disaster incidents per year

Affected population (in thousands)

Notable incident

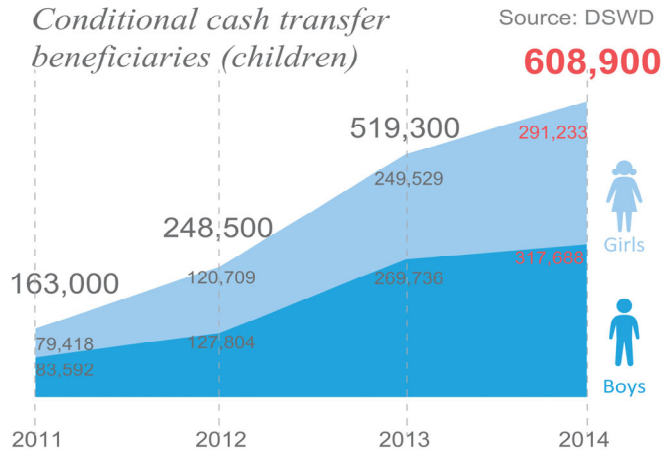
Typhoon

No affected population due to tropical cyclones in 2015 and 2016

## HUMAN DEVELOPMENT

*Conditional cash transfer beneficiaries (children)*

Source: DSWD




## NUTRITION

Source: FNRI 2012

*Malnutrition* 0-60 months old

**27%** Stunting

**15%** Underweight

**7%** Wasting

*Food insecurity*

**64%** Household

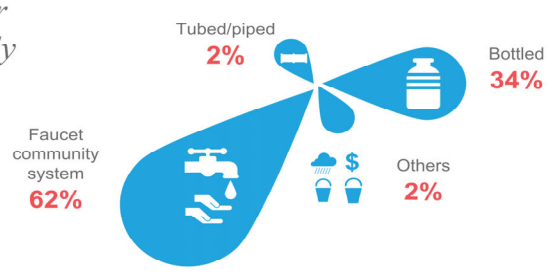
**33%** Mother

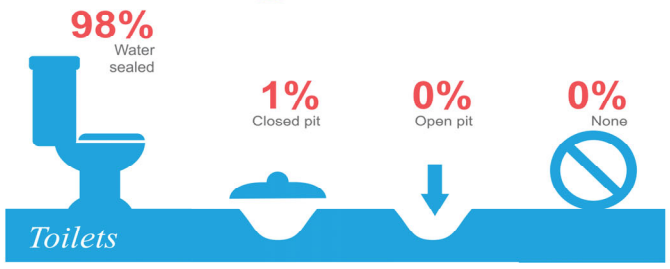
**18%** Children

## WASH

Source: PSA 2010 Census

*Water supply*




## HEALTH

*Personnel*

Source: DOH (Personnel 2012/Facilities 2016)

**1,138** Midwives

**904** Nurses

**619** Doctors

**498** Dentists

*Facilities*

**20** Barangay health stations

**493** Rural health units

**200** Hospitals (government/private)

## LIVELIHOOD

Source: PSA (QuickStat) 2016

*Labor force*

**62.9%** Participation rate

**9.3%** Under employment rate

**93.5%** Employment rate

*Sectors*

45% Service 33%

15% Industry 4%

0% Agriculture 0%

## EDUCATION

*Functional literacy rate*

Source: PSA 2010/DepEd 2016

**94%**

**518** Primary schools

**694K** Male primary school students

**649K** Female primary school students

## SHELTER

Source: PSA 2010 Census

*Roof/Wall material*

| Wall \ Roof | Strong | Light | Salvaged |
|---|---|---|---|
| Strong | 86.0% | 0.1% | 0.1% |
| Light | 12.3% | 0.6% | 0.0% |
| Salvaged | 0.6% | 0.0% | 0.0% |

*Housing tenure*

**54%** Owned/being amortized

**31%** Rented

**10%** Rent free with consent

**3%** Rent free without consent

# Climate Map

PAGASA, 2015 Data

0°0.000′ 80°0.000′W 160°0.000′W 120°0.000′E

20°0.000′N 80°0.000′S 0°0.000′ 80°0.000′N 20°0.000′S 60°0.000′N 40°0.000′S

N

2 0 2 4 6 8 km

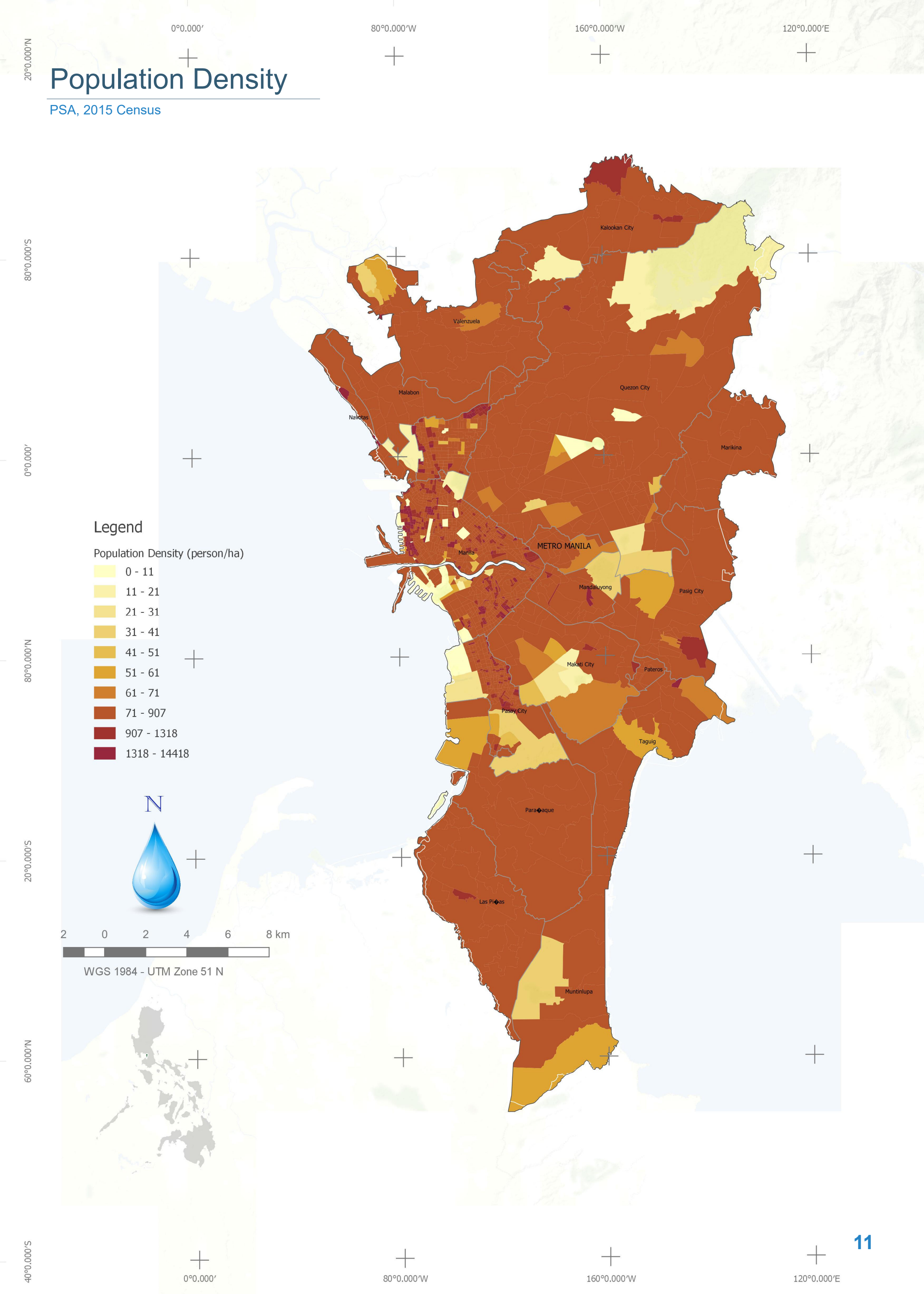
WGS 1984 - UTM Zone 51 N

## Legend

- Type I - two pronounced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September.
- Type II - no dry season with a very pronounced maximum rain period from December to February. There is not a single dry month. Minimum monthly rainfall occurs during the period from March to May.
- Type III - no very pronounced maximum rain period with a dry season lasting only from one to three months, either during the period from March to May. This type resembles Type I since it has a short dry season.
- Type IV - rainfall is more or less evenly distributed throughout the year. This type resembles Type 2 since it has no dry season.

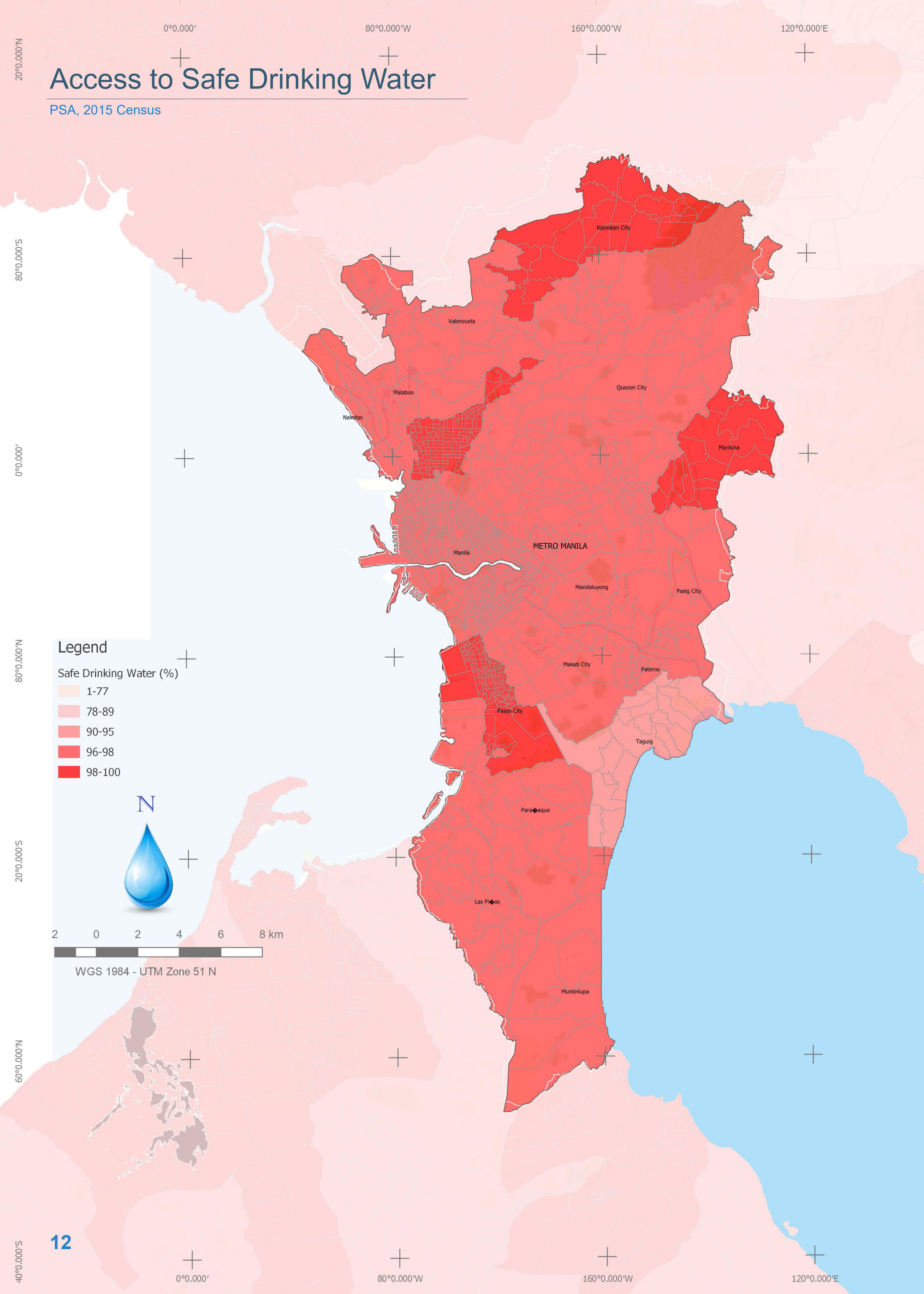
# Population Density

PSA, 2015 Census



# Access to Safe Drinking Water

PSA, 2015 Census



# Water Supply and Sanitation Coverage

## Access to Water

Approximately 93.21% of the MWSS concessionaires-covered population had access to safe water sources in 2015.[1] This figure translates to approximately 16.10 million out of 17.28 million people.

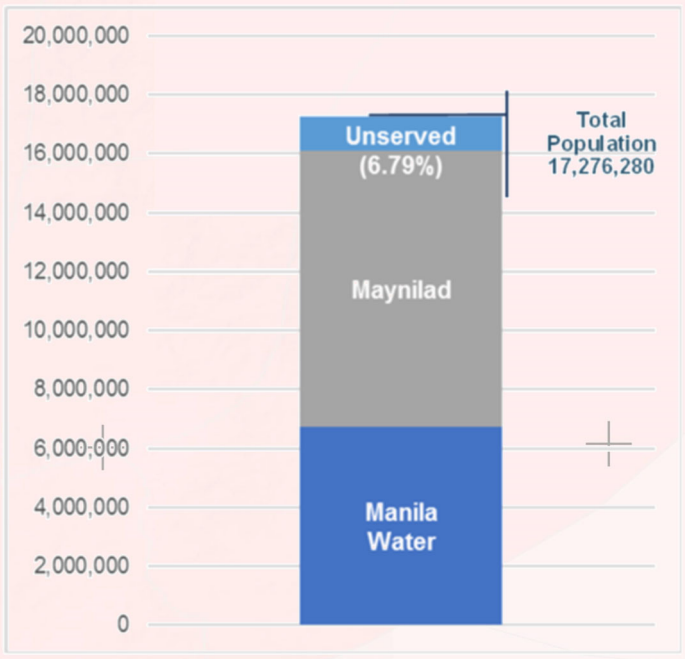



**Figure 2: Ratio of Population Served by MWSS**

## Access to Sanitation

Approximately 26.63% of the MWSS concessionaires-covered population was connected to sanitation services in 2015.[2] This figure translates to about 4.6 million out of 17.28 million people provided with sewerage and septage services by Maynilad and Manila Water.

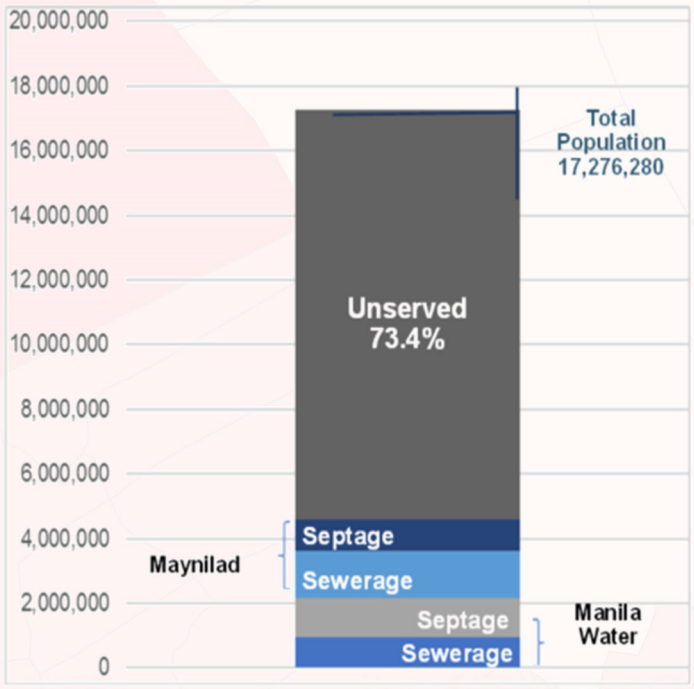



**Figure 3: Ratio of Population Covered by MWSS' Sanitation**

**Table 1: Service Coverage of MWSS Concessionaires**

| Water Service Provider | Total Population in Areas Covered* | Population Served (2017) | Percentage Coverage |
|---|---|---|---|
| Manila Water | 7,217,912 | 6,707,859 | 92.93% |
| Maynilad | 10,058,368 | 9,395,040 | 93.41% |
| Total | 17,276,280 | 16,102,899 | 93.17% |

**Source: Philippine Statistics Authority (PSA), 2015*

**Table 2: Sewerage Coverage of MWSS Concessionaires**

| Sewerage | Water-served Population | Population Served (2017) | Percentage Coverage |
|---|---|---|---|
| Manila Water | 6,707,859 | 955,533 | 14.24% |
| Maynilad | 9,395,040 | 1,455,920 | 15.50% |
| Total | 16,102,899 | 2,411,453 | 14.87% |

*Source: MWSS Regulatory Office*

**Table 3: Septage Coverage of MWSS Concessionaires**

| Septage/Sanitation | Water-served Population | Population Served (2017) | Percentage Coverage |
|---|---|---|---|
| Manila Water | 6,707,859 | 1,188,258 | 17.71% |
| Maynilad | 9,395,040 | 1,001,674 | 10.66% |
| Total | 16,102,899 | 2,189,932 | 14.19% |

*Source: MWSS Regulatory Office*

**Table 4: Total Sanitation Coverage of MWSS Concessionaires**

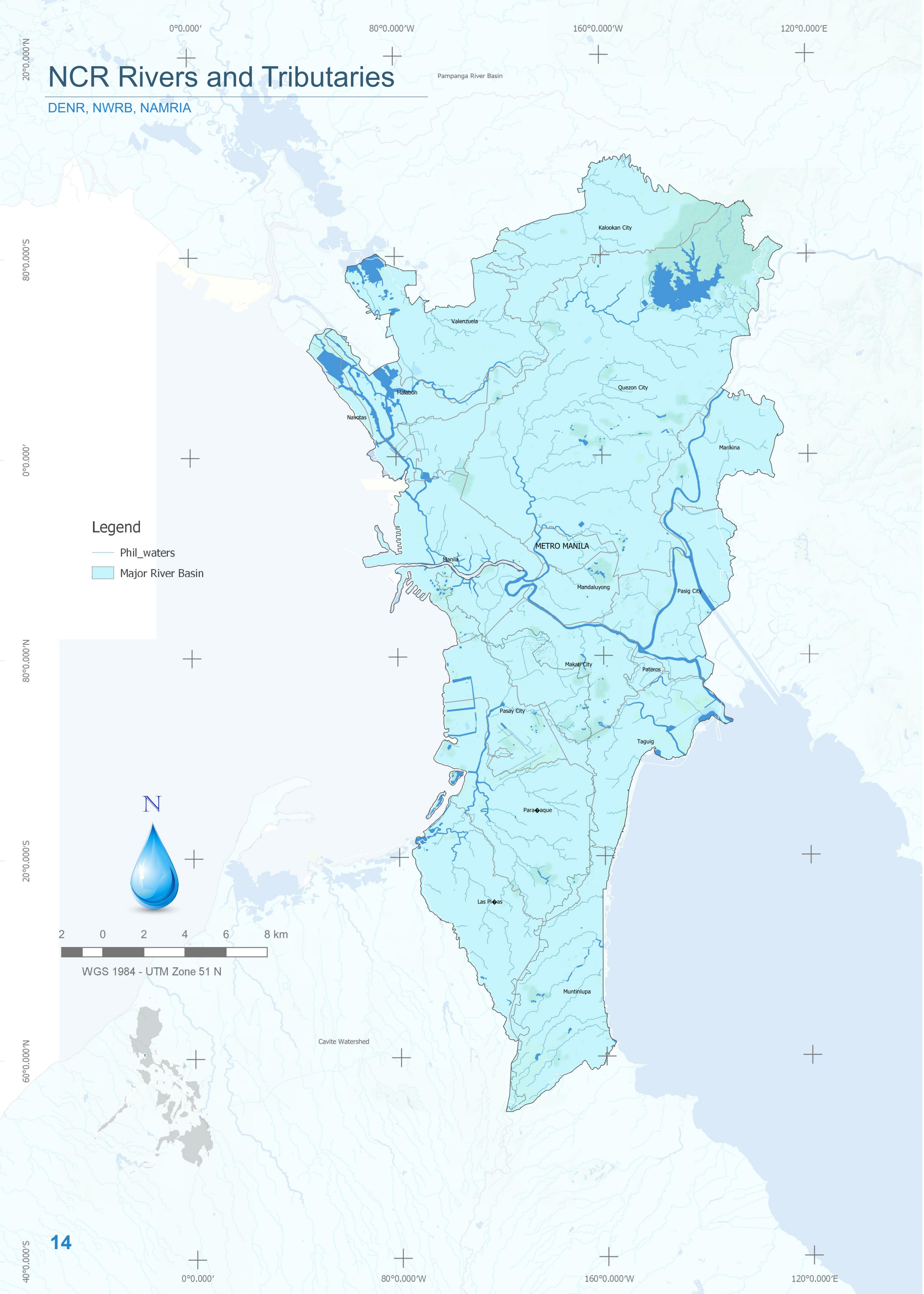
| Aggregate Sanitation | Total Population in Areas Covered* | Sewerage Population Served | Septage Population Served | Percentage Coverage |
|---|---|---|---|---|
| Manila Water | 7,217,912 | 955,533 | 1,188,258 | 29.70% |
| Maynilad | 10,058,368 | 1,455,920 | 1,001,674 | 24.43% |
| Total | 17,276,280 | 2,411,453 | 2,189,932 | 27.07% |

**Source: PSA, 2015*

[1] *Philippine Statistics Authority, Family Income and Expenditure Survey, 2015*
[2] *Ibid.*

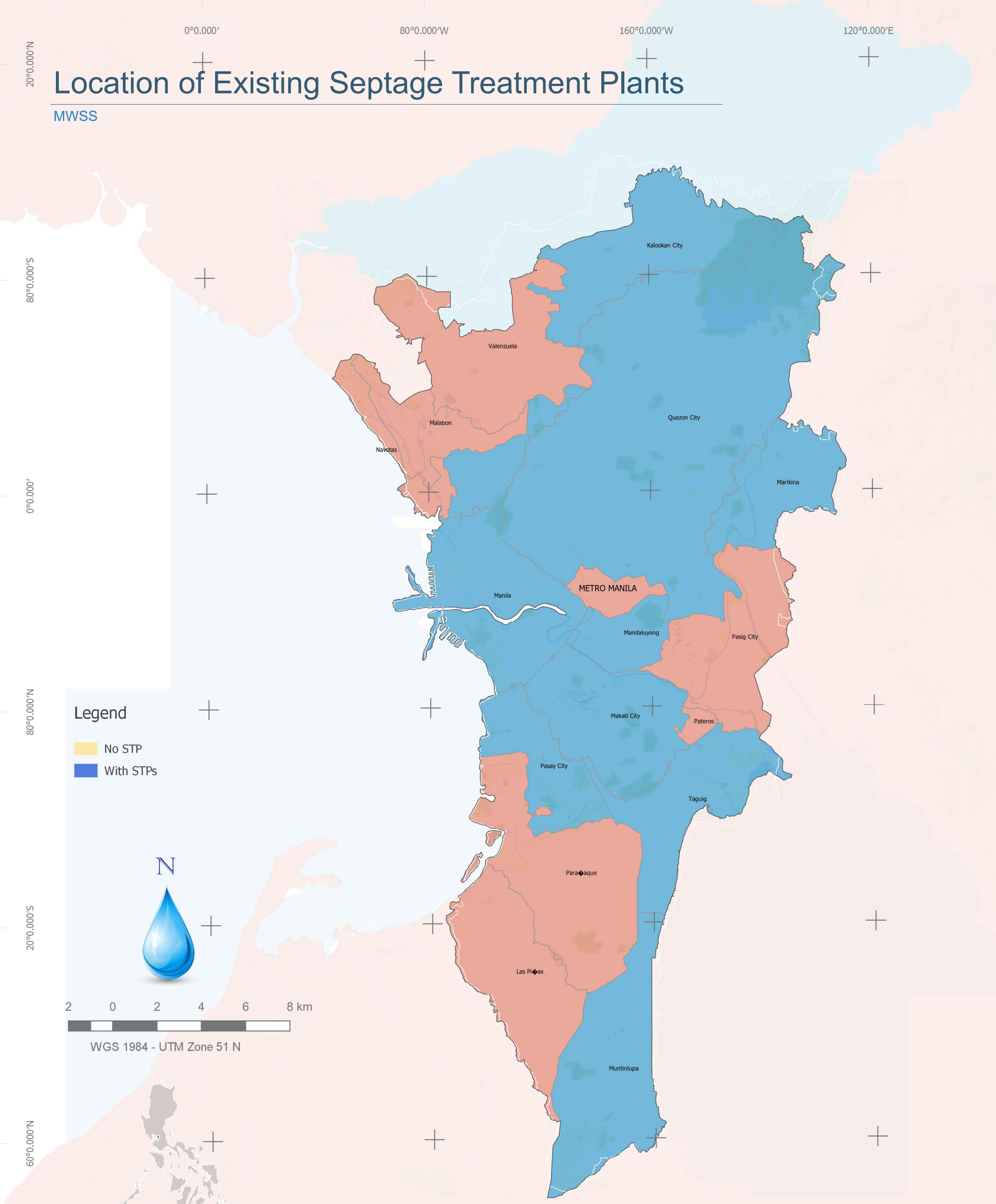
# NCR Rivers and Tributaries

DENR, NWRB, NAMRIA



# Location of Existing Septage Treatment Plants

MWSS



# Technical and Financial Capacity of Service Providers

The MWSS Regulatory Office (RO) performs financial analyses quarterly (i.e., from the 1st to the 3rd quarter) and annually to determine if the MWSS concessionaires have the financial capacity to effectively perform their obligations under their respective CA. The analyses use both internal and "external" benchmarks.

The internal benchmark includes the adjusted targets in the most recent business plan and the prior five-year average based on the submitted audited financial statements. The "external" benchmarks are standard measures that are published and/or used by other organizations in assessing the financial viability and capacity of other water operators.

Tables 5 and 6 show the financial capacity of the two concessionaires. Tables 7 through 13, on the other hand, present information on their debt and equity levels, long-term loans, and interest and cash dividends.

**Table 5: Financial Capacity of Manila Water Company, Inc.**

| Financial Ratio | Reference | Benchmark | Historical | | | | | 5-Year Ave. |
|---|---|---|---|---|---|---|---|---|
| | | | 2012 | 2013 | 2014 | 2015 | 2016 | |
| 1. Marketability | | | | | | | | |
| Water Sales (WS) per Billed Volume (BV) (PhP/$m^3$) | CA Term Extension Business Plan (BP)/2012 Revenue Regulations (RR) Model | 25.26 | 25.52 | 26.11 | 26.22 | 25.79 | 25.13 | 25.75 |
| WS per Water Service Connection (WSC), PhP Million | CA Term Extension BP/2012 RR Model | 12,486 | 14,661 | 14,723 | 14,829 | 14,618 | 14,327 | 14,632 |
| 2. Collection Efficiency | | | | | | | | |
| Collection Efficiency Rate | PWWA[3] | ≥ 95% | 97.29% | 101.14% | 99.72% | 100.08% | 100.19% | 99.68% |
| | LWUA[4] | ≥ 94% | | | | | | |
| 3. Profitability | | | | | | | | |
| Return on Equity (ROE) | Investopedia | 11% | 22.15% | 23.31% | 22.00% | 19.54% | 17.52% | 20.90% |
| Return on Assets (ROA) | AWWA[5] | 6% -10% | 9.30% | 9.43% | 8.73% | 8.62% | 8.31% | 8.88% |
| Net Profit Margin | LWUA | 10% | 38.52% | 37.82% | 35.61% | 35.78% | 35.64% | 36.67% |
| 4.Cost Control | | | | | | | | |
| Operating Ratio Based on Revenue | General | 1.00 | 0.26 | 0.25 | 0.27 | 0.31 | 0.30 | 0.28 |
| | AWWA | 1.20 | | | | | | |
| Operating Ratio Based on BV | LWUA | 16.00 | 8.48 | 8.59 | 9.12 | 10.15 | 9.59 | 9.19 |
| 5. Liquidity | | | | | | | | |
| Current Ratio | AWWA | 1.50 - 2.10 | 0.74 | 0.99 | 0.94 | 0.59 | 0.71 | 0.79 |
| | LWUA | 2.83 | | | | | | |
| 6. Leverage | | | | | | | | |
| Debt to Equity | AWWA | < 2.1- 3.1 | 1.49 | 1.70 | 1.36 | 1.18 | 1.04 | 1.36 |
| 7. Finance Ability | | | | | | | | |
| Distress Score | NRRI[6] | 4 | 12.32 | 11.37 | 12.50 | 13.30 | 14.51 | 12.80 |
| Funds from Operations Interest Cover | ESC[7] | 1.50x - 30x | 3.00x | 4.93x | 5.09x | 5.74x | 3.61x | 4.48x |
| | IPART[8] | >1.40x | | | | | | |
| Funds from Operations to Debt | IPART | 10% -15% | 6.52% | 15.40% | 16.40% | 16.80% | 8.84% | 12.79% |

**Table 6: Financial Capacity of Maynilad Water Services, Inc.**

| Financial Ratio | Reference | Benchmark | Historical | | | | | 5-Year Ave. |
|---|---|---|---|---|---|---|---|---|
| | | | 2012 | 2013 | 2014 | 2015 | 2016 | |
| 1. Marketability | | | | | | | | |
| Water Sales (WS) per Billed Volume (BV) (PhP/$m^3$) | CA Term Extension BP/2012 RR Model | 38.73 | 35.16 | 36.35 | 37.73 | 37.61 | 38.51 | 37.07 |
| WS per Water Service Connection (WSC), PhP Million | CA Term Extension BP/2012 RR Model | 17,095 | 14,033 | 14,284 | 14,686 | 14,308 | 14,633 | 14,389 |
| 2. Collection Efficiency | | | | | | | | |
| Collection Efficiency Rate | PWWA | ≥ 95% | 95.66% | 99.38% | 99.25% | 99.59% | 100.40% | 98.85% |
| | LWUA | ≥ 94% | | | | | | |
| 3. Profitability | | | | | | | | |
| Return on Equity (ROE) | Investopedia | 11% | 43.95% | 36.69% | 34.19% | 30.00% | 18.00% | 33.00% |
| Return on Assets (ROA) | AWWA | 6% -10% | 10.94% | 10.54% | 11.75% | 12.00% | 8.00% | 11.00% |
| Net Profit Margin | LWUA | 10% | 40.28% | 40.81% | 45.39% | 50.00% | 34.00% | 42.00% |
| 4.Cost Control | | | | | | | | |
| Operating Ratio Based on Revenue | General | 1 | 0.29 | 0.31 | 0.29 | 0.27 | 0.28 | 0.29 |
| | AWWA | 1.20 | | | | | | |
| Operating Ratio Based on BV | LWUA | 16 | 11.19 | 11.9 | 11.34 | 10.08 | 11.27 | 11.15 |
| 5. Liquidity | | | | | | | | |
| Current Ratio | AWWA | 1.50 - 2.10 | 0.61 | 0.73 | 0.92 | 1.02 | 1.00 | 0.86 |
| | LWUA | 2.83 | | | | | | |
| 6. Leverage | | | | | | | | |
| Debt to Equity | AWWA | < 2.1- 3.1 | 1.49 | 1.70 | 1.36 | 1.18 | 1.04 | 1.36 |
| 7. Finance Ability | | | | | | | | |
| Distress Score | NRRI | 4 | 7.45 | 5.74 | 7.75 | 9.75 | 10.24 | 8.18 |
| Funds from Operations Interest Cover | ESC | 1.50x -30x | 3.47x | 1.85x | 4.13x | 2.66x | 4.58x | 3.34x |
| | IPART | >1.40x | | | | | | |
| Funds from Operations to Debt | IPART | 10% -15% | 12.94% | 4.41% | 14.66% | 7.00% | 13.00% | 10.00% |
| | OFWAT[9] | 15% | | | | | | |

*[3] Philippine Water Works Association*
*[4] Local Water Utilities Administration*
*[5] American Water Works Association*
*[6] National Regulatory Research Institute*
*[7] Essential Services Commission*
*[8] Independent Pricing and Regulatory Tribunal Home*
*[9] The Water Services Regulation Authority*
*[10] ING N.V. Tokyo; Mizuho Corporate Bank; Bank of Tokyo-Mitsubishi; and Sumitomo Mitsui Banking Corp.*
*[11] International Finance Corporation*
*[12] MWMP - Metro Manila Wastewater Management Project; WB loaned $275 million to the Land Bank of the Philippines (LBP) for relending at an equal share to both Concessionaires*
*[13] Manila Third Sewerage Project*
*[14] International banks: Bank of Tokyo-Mitsubishi; Mizuho Bank; Sumitomo Mitsui Banking Corp.*
*[15] World Bank loaned $275 million to the LBP for relending at an equal share to both concessionaires*
*[16] For the refinancing of all its existing loans under the 2008 and 2011 on FSA; Corporate Notes*
*[17] With a local bank*
*[18] Source: 2013 Maynilad Annual Report*

# Financing and Investments

## Manila Water Company Inc.

**Table 7: Debt and Equity Levels of Manila Water**

| Description (in PhP M) | Historical | | | | | 5-Year Average |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | |
| Total Liabilities | 38,118 | 38,383 | 35,335 | 34,678 | 33,555 | 36,014 |
| Total Long-term Borrowings (including current portion) | 23,198 | 24,189 | 22,245 | 21,276 | 21,558 | 22,493 |
| Total Equity | 25,613 | 22,543 | 25,926 | 29,325 | 32,278 | 27,137 |

*Based on Audited Financial Statements*

**Table 8: Long-term Loans Availed of by Manila Water**

| Type of Obligation | Date Entered | Total Loan Amount | Term | Total Drawn |
|---|---|---|---|---|
| Foreign Currency-denominated | | | | |
| NEXI Loan[10] | 21 Oct 2010 | $150.00 M | 10 years | $150.00 M |
| Second IFC[11] Loan | 22 Nov 2006 | $30.00 M | 10 years | $ 30.00 M |
| MWMP Loan[12] (Land Bank of the Philippines [LBP]) | 02 Oct 2012 | $137.50 M | 25 years | $40.06 M |
| First IFC Loan | 28 Mar 2003 | ¥3.59 B | 12 years starting July 5, 2006 | ¥3.59 B |
| MTSP[13] Loan (LBP) | 20 Oct 2005 | ¥6.59 B | 17 years | ¥3.99 B |
| ¥40 billion Loan[14] | 30 Sep 2015 | ¥40.00 B | 7 years | ¥13.40 B |
| Local Currency-denominated | | | | |
| Corporate Notes (MWCI) | 08 Apr 2011 | PhP10.00 B | 5/10 years | |
| PhP5 billion Loan (Metrobank) | 16 Aug 2013 | PhP5.00 B | 7 years | PhP5.00 B |

**Table 9: Interest and Dividend Payments (in PhP Million) of Manila Water**

| Payments | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Interest Payments | 1,239.48 | 1,180.84 | 1,340.66 | 1,064.75 | 1,391.12 |
| Dividends Paid | 1,508.07 | 1,905.46 | 2,013.11 | 2,039.95 | 2,085.12 |

*Based on Audited Financial Statements*

## Maynilad Water Services Inc.

**Table 10: Debt and Equity Levels of Maynilad**

| Description (in PhP M) | Historical | | | | | 5-Year Average |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | |
| Total Liabilities | 44,578 | 47,965 | 44,443 | 45,416 | 46,530 | 45,787 |
| Total Long-term Borrowings (including current portion) | 21,603 | 25,313 | 24,201 | 24,826 | 26,434 | 24,475 |
| Total Equity | 16,718 | 20,602 | 27,794 | 35,433 | 40,184 | 28,146 |

*Based on Audited Financial Statements*

**Table 11: Long-term Loans Availed of by Maynilad**

| Type of Obligation | Date Entered | Total Loan Amount | Term | Total Drawn |
|---|---|---|---|---|
| Foreign Currency-denominated | | | | |
| MWMP Loan[15] (LBP) | 02 Oct 2012 | $137.50 M | 25 years | $67.5 M |
| Local Currency-denominated | | | | |
| Term Loans[16] | 22 Mar 2013 | PhP21.20 B | 10 years | |
| Corporate Notes[17] | 29 Apr 2013 | PhP5.00 B | 10 years | |
| Corporate Notes (Development Bank of the Philippines) | 24 Feb 2014 | PhP5.20 B | 15 years | PhP3.00 B |

**Table 12: Interest and Dividend Payments (in PhP Million) of Maynilad**

| Payments | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Interest Payments | 1,453.97 | 1,438.90 | 1,441.44 | 1,418.87 | 1,395.26 |
| Dividends Paid | 2,000.00 | 13,494.15 | 1,000.14 | 1,999.99 | 1,999.62 |

*Based on Audited Financial Statements*

**Table 13: Schedule of Cash Dividends of Maynilad Declared in CY 2013**

| Date | Description | Amount (in PhP) |
|---|---|---|
| 13 Feb 2013 | Cash dividend PhP2,841.32 per common share | 11.40 B |
| 24 Jun 2013 | Cash dividend PhP241.92 per common share | 1.10 B |
| 25 Nov 2013 | Cash dividend PhP219.93 per common share | 1.00 B |
| | Total | 13.50 B |

*Source: Maynilad Water Services, Inc. 2013 Audited Financial Statement*

On February 13, 2013, the entry of Marubeni as a shareholder with an indirect 20% ownership in Maynilad was completed. The transaction involved Marubeni's direct investment in Maynilad Water Holding Company, Inc. (MWHCI), Maynilad's controlling shareholder, which subsequently subscribed to additional shares in the company at PhP10.40 billion.

On the same day, Maynilad approved a cash dividend amounting to PhP11.40 billion to all shareholders of record as of February 4, 2013 and payable within the month. MWHCI's additional investment resulted in additional paid-in capital of PhP9.86 billion, effectively replacing part of the retained earnings that had been declared as dividends. An additional PhP1.10 billion in dividends was also paid in July and another PhP1.00 billion in December.[18]

## New Concession Fee Loans by MWSS

The Concession Fee arrangement between the concessionaires and MWSS presents a unique financing arrangement. MWSS obtains the loans to finance the required infrastructure projects of the water and sewerage system, and the concessionaires shall have the eventual obligation to pay the debt service and local component for these projects. MWSS and the concessionaires agree on a specific sharing scheme for each Concession Fee loan obtained by MWSS.

**Table 14: Loans Granted for MWSS Concession Fees**

| Concession Fee | Date Entered | Total Loan Amount | Term | Manila Water Share | Maynilad Share |
|---|---|---|---|---|---|
| Asian Development Bank (ADB) 2012 | 24 Nov 2003 | $3.26 B | 10 years | 56% share | 44% share |
| Exim Bank of China | 07 May 2010 | $116.60 M | 20 years | 50% share | 50% share |

# WSS Sector Gaps

Certain gaps in infrastructure development, financing and viability in regard to NCR's water supply and sanitation sector have been identified to immediately address the need for improved and reliable water supply and sanitation.

## Challenges in Water Supply

### Impending Shortage in Water Supply

The increasing urban population in Metro Manila and nearby provinces has heightened the need for the implementation of a comprehensive water security policy and roadmap.

The New Centennial Water Source Project of the MWSS is expected to address the deficiency in water supply through the construction of Kaliwa and Laiban Dams. Kaliwa Dam, a 600-million-liters-per-day (MLD) project is a key medium-term, additional water source designed to augment Metro Manila's water supply which heavily depends on Angat Dam.

In addition to complementing the existing supply from the Angat Dam, it diversifies water sources and avoids the need to rely on a single source. In the long-term, the construction of Laiban Dam (1,800 MLD) will further augment water supply and help ensure water security for Metro Manila.

However, the target period for the completion of the New Centennial Water Source Project has been repeatedly extended. This has presented, therefore, an urgent need to update the Metro Manila Water Supply Master Plan and expedite the construction of new water sources to prevent a looming water supply shortage.

### New Regulatory Requirements

The Department of Environment and Natural Resources (DENR) issued Administrative Order No. 2016-08 in June 2016 regulating the discharge of nutrients (ammonia, nitrates, and phosphates) by MWSS and its concessionaires to prevent the further degradation of Philippine waterways and water bodies. Nutrient removal becomes a legal requirement for effluent discharges. This requirement entails additional costs on the part of MWSS and its two concessionaires since existing facilities need to be upgraded and future facilities designed accordingly.

The administrative order provides a five-year moratorium for regulated entities; Manila Water, however, believes that the period stipulated in this moratorium is not sufficient. Manila Water and MWSS thereafter submitted a request for another five-year extension of the grace period.

The Department of Public Works and Highways (DPWH) recently issued a directive to all concerned agencies to use one-day concrete, Portland Cement Concrete Pavement in all restoration works affected by MWSS projects, emphasizing that no excavation permit shall be processed for approval unless the said concrete mixture is used or adopted.

### Heightened Earthquake Risk

The Metro Manila Earthquake Impact Reduction Study (MMEIRS, 2004) sounded the alarm that the West Valley Fault, which is approaching its active phase, could trigger an earthquake of magnitude 7 (or one of stronger intensity). One disturbing finding was that the Angat-Ipo-La Mesa Water Resource system, which provides 97% of Metro Manila's water supply, could experience significant damage. Under this scenario, NCR would experience massive water interruptions should 200 to 4,000 breakage incidents occur along 4,600 kilometers of water disruption lines.

Shorter- and medium-term investments are needed to strengthen the capacity for disaster resiliency of the water sources, transmission lines, treatment plants, and distribution systems, especially on bridge crossings.

### Expensive Pipe-laying

MWSS and its concessionaires find it daunting to obtain permits from local governments to lay water and wastewater pipes in the streets with worsening traffic conditions. Permits for approved projects allow construction work only for a limited number of hours, normally at night, which makes completion time longer.

Alternatively, MWSS and its concessionaires must rely on trenchless pipe laying, which can cost two or three times more than open-pit pipe laying.

## Challenges in Building Sewerage Systems

### Difficulty in Sewer Network Maintenance

Sewer networks need to be cleaned more frequently due to the accumulation of solid and other wastes and grit. Sewer lines are clogged for two reasons: the improper disposal of solid and other wastes and the deterioration of sewer lines. Most solid and other wastes collected in sewer manholes are mostly associated with domestic wastes since some customers flush solid waste into their toilets or sinks. This practice results in clogging of the customers' sewer connections. Other forms of waste, such as oil and grease, contribute to the clogging of sewer pipes and sewer mains, thereby reducing the collection of sewage flows in the catchment area.

Another challenge is the infiltration and exfiltration in sewer mains resulting from deteriorated sewer lines. Infiltration and exfiltration can also affect the variability of sewage hydraulic flow and concentrations.

Mitigation plans and activities were identified to address these challenges, such as intensive and massive education and information campaigns conducted at the barangay level, comprehensive preventive maintenance activities to identify hotspots, and programmed sewer network rehabilitation for old lines.

### Variable Sewage Concentrations

Sewage concentrations vary on account of uncontrolled discharge from some households or establishments of higher pollution loading that is not in accord with the design of the used water treatment facility, particularly oil and grease concentration. This variability results in process upsets in the facility affecting the treatment efficiency and effluent quality.

Part of the mitigation plans and activities is to develop a guideline or policy regarding the allowed sewage quality/ concentrations to be implemented for non-domestic establishments.

### Land

There are several land-related factors that pose risks to and delay the timely completion of MWSS water projects:

- Preferred sites under negotiation require government expropriation.
- The cost of land is prohibitive (which points to inflated land value, overpriced land, or rising land prices).
- Available sites are not large enough for the intended application.
- No available vacant lots have been found suitable for the intended application.
- It is almost impossible to remove informal settlements found in alternative sites.
- Acquired lots need to be converted to industrial land.

## Project Implementation Challenges

MWSS and its concessionaires have found that certain situations carry with them serious challenges to their planned construction and upgrading of waterworks:

- Proliferation of informal settlers in areas designated for plants, pipelines, and conveyances
- Acquisition of land/right-of-way
- Government bureaucratic red tape pertaining to applications for permits
- Timeliness of excavations regarding public works and projects of other utility companies
- Substandard quality of restoration works of contractors hired by LGUs

## Access Targets for Water Supply and Sanitation

**Table 15: MWSS Concessionaires' WSS Access Targets**

| Coverage Target | 2021 | 2026 | 2031 | 2037 |
|---|---|---|---|---|
| Manila Water Company, Inc. (Manila Water) | | | | |
| *Water* | 96% | 99% | 99% | 99% |
| *Sewerage* | 39% | 65% | 99% | 99% |
| Maynilad Water Services, Inc. (Maynilad) | | | | |
| *Water* | 99.5% | 100% | 100% | 100% |
| *Sewerage* | 47% | 68% | 87% | 100% |
| *Sanitation* | 81% | 74% | 68% | 63% |

## Service Delivery and Water Utility Performance

Water availability is defined as the availability of an uninterrupted 24-hour supply of water to all connected customers in the service area. This definition allows for interruptions resulting from the temporary failure of certain facilities (where the concessionaire acts promptly to remedy such failure) or from the required repair or construction of such facilities, which could otherwise not be performed without interruption to the supply of water.

**Table 16: Target Service Delivery and Water Utility Performance**

| Target Parameter | 2021 | 2026 | 2031 | 2037 |
|---|---|---|---|---|
| Manila Water Company, Inc. (Manila Water) | | | | |
| *Water Quality** | PNSDW-Compliant | PNSDW-Compliant | PNSDW-Compliant | PNSDW-Compliant |
| *Non-revenue Water (NRW)* | 12% | 12% | 12% | 12% |
| Maynilad Water Services, Inc. (Maynilad) | | | | |
| *Water Availability* | 96.3% | 100% | 100% | 100% |
| *Pressure (16 psi)* | 96.3% | 100% | 100% | 100% |
| *Water Quality* | PNSDW-Compliant | PNSDW-Compliant | PNSDW-Compliant | PNSDW-Compliant |
| *NRW* | 30% | 21% | 20% | 20% |

** Water quality must comply with the Philippine National Standards for Drinking Water.*

# Addressing the Gaps

## Existing and Proposed Facilities

Table 17 lists existing water sources supplying the daily water needs of NCR and its vicinity. Table 18 shows the proposed and potential water sources to be tapped by the MWSS to adequately respond to the region's growing water demand.

At present, the available supply for NCR is estimated at 4,200 MLD. By 2020, this volume would not be sufficient to cover the water needs of its service areas — it is expected that by 2037, water demand would have gone up to about 7,000 MLD. Tapping the proposed water sources (as shown in Table 18) would augment the MWSS supply by 2,750 MLD. This would bridge the water supply-demand gap (see Figure 4) projected throughout the concession years.

Tables 19 to 22 present the existing and proposed sanitation facilities of the two MWSS concessionaires.

**Table 17: Existing Water Sources for NCR**

| No. | Water Source | Capacity (MLD) | Year |
|---|---|---|---|
| 1 | Angat Dam | 4,000 | |
| 2 | Laguna Lake (Putatan WTP 1) | 150 | 2010 |
| 3 | Laguna Lake (Putatan WTP 2) | 150 | 2018 |
| | **Total** | **4,300** | |

**Table 18: New Water Sources for NCR**

| No. | Water Source | Capacity (MLD) | Year |
|---|---|---|---|
| 1 | Laguna Lake (RPWSIP) | 100 | 2019 |
| 2 | Laguna Lake (Putatan WTP 3) | 100 | 2019 |
| 3 | Deep Wells | 50 | 2020 |
| 4 | Laguna Lake (Putatan WTP 4) | 100 | 2020 |
| 5 | Kaliwa Dam | 600 | 2023 |
| 6 | Laiban Dam | 1,800 | 2028 |
| | **Total** | **2,750** | |

*Source: MWSS New Water Sources Roadmap, April 24, 2018*

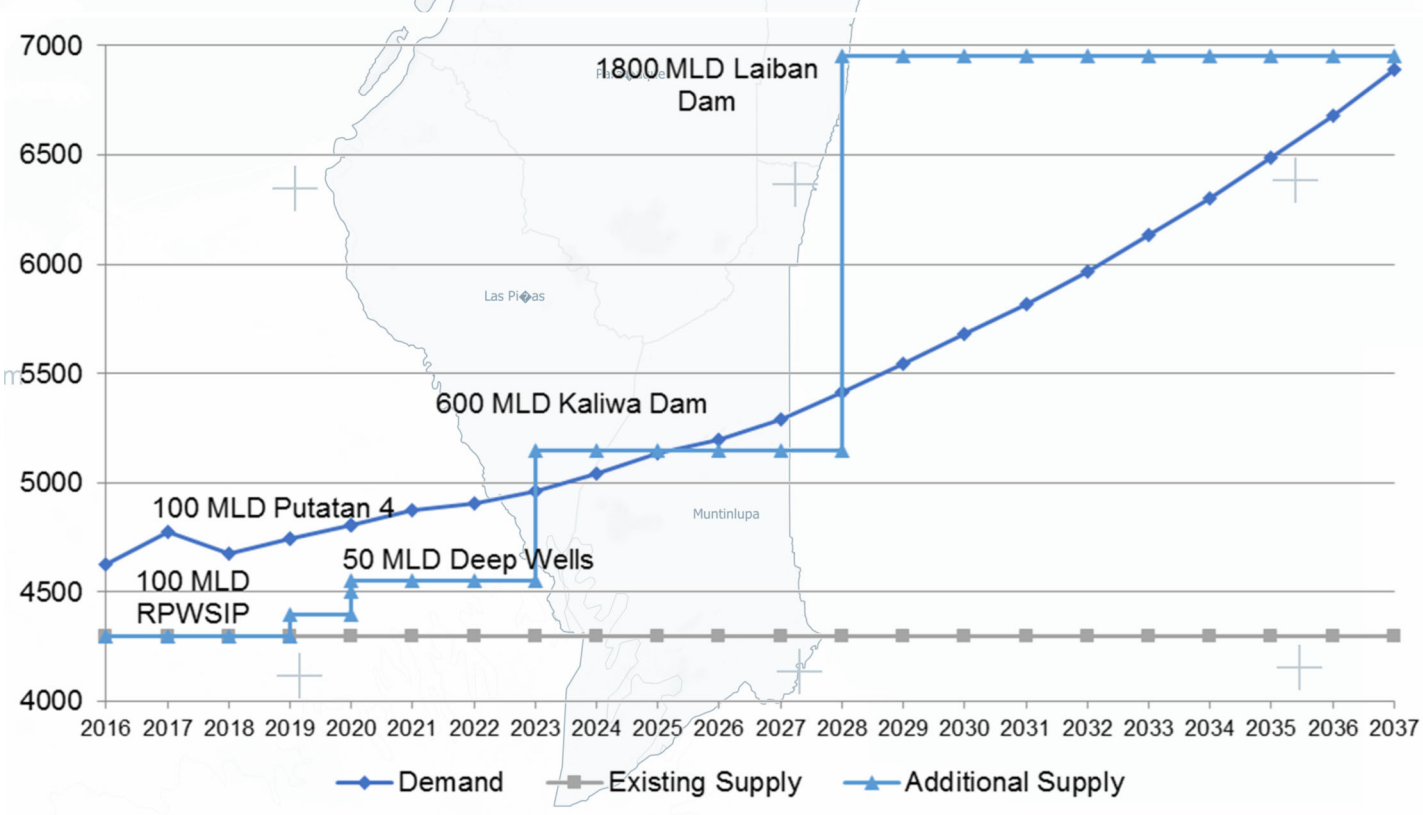



**Figure 4: Water Supply and Demand in NCR**

**Table 19: Existing Sewage Treatment Plants of Manila Water**

| No. | STP Name | Capacity ($m^3$/day) |
|---|---|---|
| 1 | A.Luna | 2,200 |
| 2 | Bagong Lipunan Condominium | 1,359 |
| 3 | Belarmino | 1,640 |
| 4 | Capitolyo (Pineda) | 4,000 |
| 5 | Centennial | 1,277 |
| 6 | Diego Silang | 3,570 |
| 7 | East Avenue | 16,710 |
| 8 | Fisheries | 400 |
| 9 | Fortville | 1,142 |
| 10 | FTI | 2,814 |
| 11 | Guadalupe | 851 |
| 12 | Heroes Hill | 1,700 |
| 13 | Kalayaan | 4,414 |
| 14 | Karangalan 1 | 931 |
| 15 | Karangalan 2 | 1 ,193 |
| 16 | Karangalan 3 | 764 |
| 17 | Karangalan 4 | 1,265 |
| 18 | Karangalan 5 | 577 |
| 19 | Karangalan 6 | 504 |
| 20 | Karangalan 7 | 764 |
| 21 | Karangalan 8 | 968 |
| 22 | Karangalan 9 | 777 |
| 23 | Lakeview Manors | 470 |
| 24 | Maharlika | 470 |
| 25 | Makati Pabahay | 600 |
| 26 | Makati South (Magallanes) | 40,000 |
| 27 | Mandaluyong (MRH) | 287 |
| 28 | Marikina North | 100,000 |
| 29 | Olandes | 10,360 |
| 30 | Pagasa | 685 |
| 31 | Palosapis | 1,500 |
| 32 | Pasig North and South (Under Construction) | 100,000 |
| 33 | Philam | 2,069 |
| 34 | Pinagsama | 8,000 |
| 35 | Poblacion | 11,026 |
| 36 | Road 5 | 3,540 |
| 37 | San Mateo (North) STP | 586 |
| 38 | Sikatuna | 609 |
| 39 | Taguig North/Liwasan ng Kagitingan at Kalikasan | 75,000 |
| 40 | University of the Philippines | 7,014 |
| 41 | Valle Verde | 75 |
| | **Total** | **412,111** |

**Table 20: Existing Sewage Treatment Plants of Maynilad**

| No. | STP Name | Capacity ($m^3$/day) |
|---|---|---|
| 1 | Alabang STP | 10,000 |
| 2 | Bahay Toro STP | 13,400 |
| 3 | Bagbag STP | 10,400 |
| 4 | Baesa STP | 390 |
| 5 | Congressional STP | 567 |
| 6 | Dagat-Dagatan STP | 26,000 |
| 7 | Del Monte STP | 3,510 |
| 8 | Grant STP | 621 |
| 9 | Kapiligan STP | 6,000 |
| 10 | Legal STP | 409 |
| 11 | Paco STP | 410 |
| 12 | Paltok STP | 4,900 |
| 13 | Project 7 STP | 2,400 |
| 14 | Samson STP | 1,900 |
| 15 | San Antonio STP | 3,310 |
| 16 | South Septage Treatment Plant | 250 |
| 17 | Talayan STP | 15,400 |
| 18 | Tandang Sora STP | 1,200 |
| 19 | Tatalon STP | 8,100 |
| 20 | Tondo Sewage Pumping Station | 432,000 |
| | **Total** | **541,167** |

*Source: Asset Condition Report for 2017*

**Table 21: Proposed Sewage Treatment Plants of Manila Water**

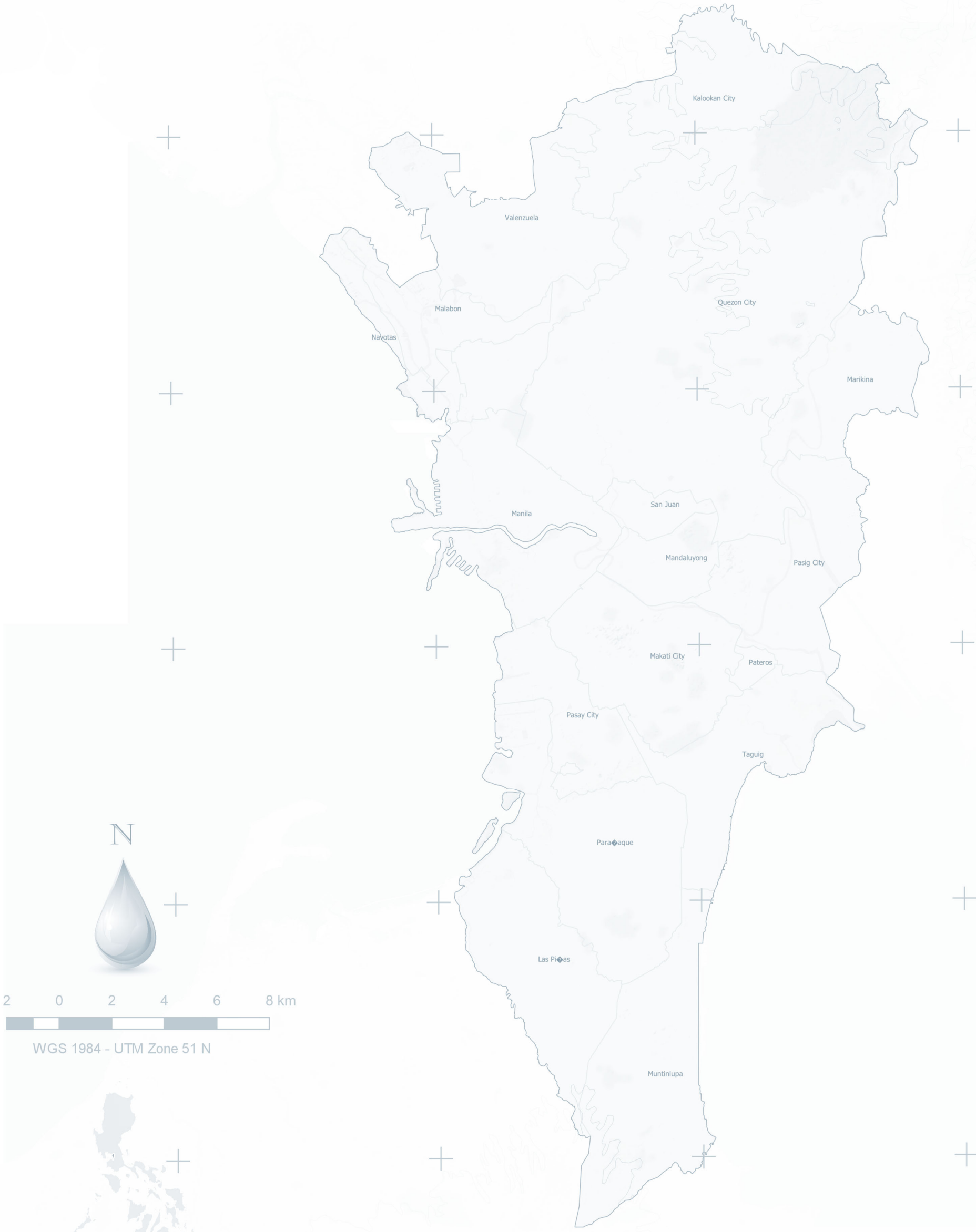
| Sub-Catchment | STP Ultimate Design Capacity (MLD) |
|---|---|
| Taguig Central | 125 |
| North and South Pasig | 140 |
| Makati-Manila | 75 |
| Mandaluyong West-San Juan South-QC South | 130 |
| Quezon City North-Quezon City West | 160 |
| San Mateo-Rodriguez | 75 |
| Hinulugang Taktak | 20 |
| Marikina South | 20 |
| Quezon City East | 22 |
| Antipolo | 35 |
| East of Manggahan | 145 |
| **Total** | **947** |

*Some STPs will be implemented in phases (e.g., two phases, three phases, etc.).*
*Source: Manila Water Business Plan*

**Table 22: Proposed Sewage Treatment Plants of Maynilad**

| Sub-Catchment | STP Ultimate Design Capacity (MLD) |
|---|---|
| 2018-2022 | |
| Kawit | 13 |
| Las Piñas | 88 |
| Muntinlupa Stage 2 (Poblacion) | 14 |
| Navotas-Malabon-South Caloocan | 205 |
| **Subtotal** | **320** |
| 2023-2027 | |
| Bacoor Stage 1 | 93 |
| Caloocan North Stage 1 | 58 |
| Imus Stage 1 | 47 |
| Manila South Stage 2-Malate | 12 |
| Manila South (expansion) | 124 |
| Parañaque Stage 2 | 29 |
| Pasay-Makati Upgrading of STP 1 | 28 |
| Quezon City East | 40 |
| Quezon City West Upgrading of Stage 1 | 40 |
| Rosario-Noveleta | 20 |
| Valenzuela West Stage 2 | 24 |
| **Subtotal** | **515** |
| 2028-2032 | |
| Bacoor Stage 2 | 15 |
| Caloocan North Stage 2 | 56 |
| Manila North Stage 1 STP 1 (expansion) | 80 |
| Manila North Stage 2 STP 2 | 10 |
| Manila North Stage 2 STP 3 | 18 |
| Manila North Stage 3 STP 5 | 48 |
| Manila North Stage 3 STP 6 | 8 |
| Parañaque Stage 3 | 32 |
| Parañaque Stage 4 | 10 |
| Pasay-Makati Stage 2 | 78 |
| Quezon City North Stage 1 | 45 |
| Valenzuela East | 30 |
| **Subtotal** | **430** |
| 2033-2037 | |
| Caloocan North Stage 3 | 30 |
| Imus Stage 2 | 41 |
| Parañaque Upgrading of STP 1 | 11 |
| Quezon City North Stage 2 | 101 |
| **Subtotal** | **183** |
| **Total** | **1,448** |

*Source: Manila Water Business Plan*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# Investment Program

Tables 23 and 24 present a summary of the ambitious investment programs of Manila Water and Maynilad aimed at modernizing and expanding WSS infrastructure.

**Table 23: Investment Program of Manila Water**

| Pillar (PhP M, 2018 prices) | 2018-2022 | 2023-2027 | 2028-2032 | 2033-2037 | 2018-2037 |
|---|---|---|---|---|---|
| Service Continuity | 10,085 | 8,004 | 7,330 | 4,648 | 30,067 |
| Water Security | 24,704 | 16,125 | 8,170 | 5,811 | 54,809 |
| Service Accessibility | 17,431 | 3,874 | 41 | 0 | 21,346 |
| Environmental Sustainability | 37,441 | 41,121 | 29,676 | 7,725 | 115,964 |
| **Total** | **89,661** | **69,124** | **45,127** | **18,184** | **222,186** |

**Table 24: Investment Program of Maynilad**

| Pillar (PhP M, 2018 prices) | 2018-2022 | 2023-2027 | 2028-2032 | 2033-2037 | 2018-2037 |
|---|---|---|---|---|---|
| Water CapEx | 60,331 | 19,370 | 12,041 | 7,371 | 99,113 |
| *Water Sources Program* | 26,302 | 605 | 23 | 15 | 26,945 |
| *Operations Support Program* | 15,205 | 8,471 | 4,992 | 1,315 | 29,983 |
| NRW Management and Expansion Program | 18,824 | 10,294 | 7,026 | 6,041 | 42,185 |
| Wastewater CapEx | 30,567 | 41,729 | 42,075 | 17,593 | 132,325 |
| *Sewerage Program* | 30,189 | 41,566 | 41,946 | 17,937 | 131,638 |
| *Sanitation Program* | 378 | 164 | 129 | 17 | 687 |
| Customer Service and Information, CapEx | 2,972 | 2,818 | 2,680 | 2,248 | 10,718 |
| **Total** | **184,768** | **125,017** | **110,912** | **52,537** | **473,594** |

# Financing Plan

The review of the financing strategy for the business plans was not part of the scope of activities during the rate rebasing exercise. The MWSS RO determines the gearing rate to be used while determining the Appropriate Discount Rate. The gearing rate in the most recent rate rebasing was based on the observations on the debt and equity mix of several water supply and wastewater operators, both local and international (including the two MWSS concessionaires).

The gearing ratio used in the 2013 Rate Rebasing was 40%. The MWSS RO and the concessionaires, however, have been given a free hand in selecting the level of gearing based on the established gearing ratio.

# National Economic and Development Authority

12 St. Josemaria Escriva Drive, Ortigas Center, Pasig City
Trunkline: (+632) 86310945 to 56
Email: info@neda.gov.ph

www.neda.gov.ph
NEDAhq