

Watershed Management Report

December 2023

We continuously protect and reforest watersheds where we source our raw water.

With more than 90% of our raw water coming from surface water sources, we prioritize the protection, rehabilitation, and conservation of our watershed areas. Watershed degradation results in soil erosion, heavy sedimentation, water pollution, and other issues that affect the quality and quantity of our raw water sources.

This is why, at Manila Water, we remain committed to the protection and management of the watershed areas in partnership with the government and stakeholders. Watershed management is not just our collective way to mitigate water supply risk, it also enables us and our partners protect threatened species in the watershed, contributing to enhanced biodiversity and climate change mitigation through reforestation and enrichment planting.

In 2023, we safeguarded 171,902 hectares in General Nakar, Ipo, La Mesa, Nabaoy and Pan-As Hayiban by funding our partners to patrol the watersheds. With 103,624 trees planted, our total number of trees nurtured since 2006 is now 1,566,569 across the Philippines. We also supported watershed communities and indigenous people through the Water, Sanitation and Hygiene (WASH) program, livelihood interventions, and trainings.



Key watersheds of Manila Water

Upper Marikina

Total area of the watershed:
29,505.8 hectares
Protected Area as a Protected
landscape (Presidential
Proclamation No. 296, 2011)

General Nakar

Composed of Kaliwa, Kanan, Umiray
and 13 minor watersheds
Total area of the watershed: 186,297 hectares
Kaliwa and Umiray watersheds as a
Forest Reserve (Presidential Proclamation
No. 573, 1969)

Ipo

Total area of the watershed:
6,600 hectares
Protected Area as a
Forest Reserve
(Presidential Proclamation
No. 391 La Mesa, 1968)

La Mesa

Total area of the watershed:
2,659 hectares
Protected Area as a Watershed
Reservation (Presidential
Proclamation No. 1336, 2007)

Nabaoy

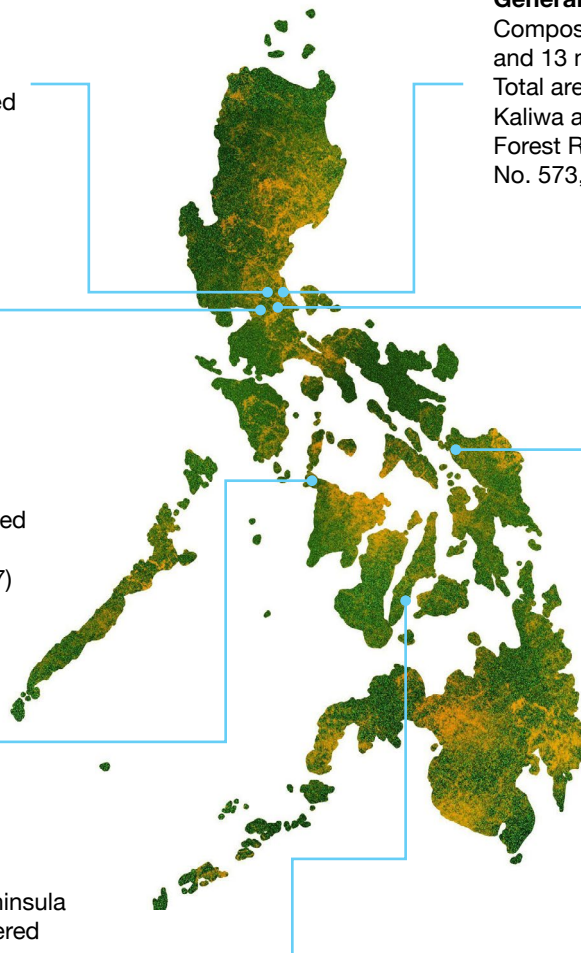
Total area of the watershed:
2,375 hectares
Part of Northwest Panay Peninsula
Nature Park which is considered
as Protected Area under
RA7586 (NIPAS Act of 1992)

Pan-As Hayiban

Total area of the watershed:
5,067 hectares
Protected Area as a
Protected Landscape
(RA 7586: NIPAS Act of 1992
and RA 11038: Expanded
NIPAS Act of 2018)

Luyang

Total area of the
watershed: 5,539 hectares



2023 Watershed Management Performance

East Zone

Ipo Watershed

Management Action:

- Funded the continuing protection of the whole watershed through the patrolling of 60 *Bantay Gubat* (*Forest Rangers*), composed of Dumagat, the indigenous people (IP) living in the watershed. This is in partnership with the Metropolitan Waterworks and Sewerage System (MWSS), the Department of Environment and Natural Resources (DENR), and Maynilad.
- Forest landscape restoration with 60,000 trees planted in 150 hectares through Yapak, the People Organization composed of Dumagat and local communities in the watershed part of Manila Water's MWSS Annual Million Tree Challenge)
- Provided water supply to Dumagat communities through Manila Water Foundation's WASH program
- Conducted Forest Carbon Accounting in partnership with the Center for Conservation Innovation (CCI)

Protected Threatened Species based on the International Union for Conservation of Nature (IUCN)¹:

Critically endangered: Yakal saplungan (*Hopea plagata* (*syn H.odorata*))

Endangered: Apitong (*Dipterocarpus grandiflorus* (Blanco)), Kape (*Coffea arabica* Linn.), Narra (*Pterocarpus indicus* Willd.), Teak (*Tectona grandis*)

Vulnerable: Mahogany (*Swietenia macrophylla*), Paho (*Palaquium luzoniense* (Fern.- Vill.)), Palosapis (*Anisoptera thurifera* Blume.), Sakat (*Terminalia nitens*), Takip-asin (*Macaranga grandifolia*)

Additional Protected Threatened Species based on DENR DAO 2017-11¹ :

Vulnerable: Bolong-eta (*Diospyros philosanthera* Blanco), Kalantas (*Toona calantas* Merr. & Rolfe), Makaasim (*Syzygium nitidum* Benth), Malabayabas (*Tristaniopsis decorticata* (Merr.)), Pahutan (*Mangifera altissima* Blanco), Tanguile (*Shorea polysperma*)

La Mesa Watershed

Management Action:

- Funded the continuing protection through foot patrolling and maintenance of access roads of the whole watershed in partnership with ABS- CBN Foundation's Bantay Kalikasan
- Planted 30,000 native trees in 75 hectares in 2023 (part of Manila Water's MWSS Annual Million Tree Challenge)
- Conducted maintenance of enriched areas from 2020 to 2023
- Performed Forest Carbon Accounting in partnership with CCI

Protected Threatened Species based on the International Union for Conservation of Nature (IUCN)¹ :

Endangered: Teak (*Tectona grandis*), Narra (*Pterocarpus indicus*)

Vulnerable: Magabuyo (*Celtis luzonica*), Hagupit/Is-is (*Ficus ulmifolia* Lam.), Mahogany (S) (*Swietenia macrophylla*), Palosapis (*Anisoptera thurifera*)

Additional Protected Threatened Species based on DENR DAO 2017-11¹:

Endangered: Beri/Bari (*Aquilaria malacensis* Lam.), Molave (*Vitex parviflora*)

Vulnerable: Kalantas (*Toona calantas* Merr.), Kamagong (*Diospyros discolor*), Lauan (*Shorea contorta*), Makaasim (*Syzygium nitidum* Benth)

Biodiversity Value²:

Flora: Shannon Diversity (H) Index = 1.8184. High biodiversity value for it falls within the range of 1.5-3.5

Fauna: 29 bird families, 47 species

¹Threatened Species that were observed in Ipo and La Mesa watersheds during the Forest Carbon Accounting by CCI, Manila Water's partner in the project

²Source: Integrated Watershed Management Plan for the La Mesa Watershed Reservation for 25 Years

East Zone

General Nakar (Kaliwa, Kanan, Umiray, and 13 minor watersheds)

Management Action:

- Funded the General Nakar Sustainable Integrated Area Development (GNSIAD) Project for the management of General Nakar watersheds with the following 2023 accomplishments:
 - Protection of the entire watersheds of Kaliwa, Kanan, Umiray, and 13 minor watersheds through the patrolling of 47 *Bantay Gubat* (forest rangers)
 - Planted 9,719 native forest and fruit trees in 2023
 - Assisted IPs and Non-IPs communities on community development, WASH, and livelihood programs
 - Improved solid waste management through the establishment of Materials Recovery Facilities and provision of vehicles for the collection of recyclables and wastes
 - Conducted IECs for the communities and schools on environmental protection, watershed conservation, and climate change
 - Continuous profiling of flora and fauna in the watersheds
 - Launched the General Nakar Automated Tracking Watershed Patrol Application for forest protection and biodiversity conservation program

Protected Threatened Species based on IUCN³ :

Endangered: Apitong (*Dipterocarpus grandiflorus*), Narra (*Pterocarpus indicus*), Tiaong (*Shorea ovata*)

Vulnerable: Dalindingan (*Hopea malibato*), Almaciga (*Agathis philippinensis*), Nato (*Palaquium luzoniense*)

Additional Protected Threatened Species based on DENR DAO 2017-11³:

Critically Endangered: Alupag (*Dimocarpus longan*), Kamagong (*Diospyros bicolor*), Malabayabas (*Tristaniaopsis decorticata*), Red Lauan (*Shorea negrosensis*), Tanguile (*Shorea polysperma*), White Lauan (*Shorea contorta*)

Endangered: Batikuling (*Litsea leytensis*),

Vulnerable: Pahutan (*Mangifera altissima*), Bolong-eta (*Diospyros philosantha* Blanco)

Biodiversity Value⁴:

Flora: Shannon Diversity (H') = 4.71. Very High Diversity

Fauna: Shannon Diversity = 2.795. Moderate Diversity

Upper Marikina

Management Action:

- Through the People's Organization, Tulungan sa Kabuhayan ng Calawis, Inc (TSKC), we conducted the protection and the first year maintenance of the 93,750 trees planted in 150 hectares in 2022.
- Based on the validation of the DENR, the survival rate of the trees planted in 2022 was 89%.
- TSKC replanted the seedlings that did not survive as part of the maintenance activities.

³Threatened species were inventoried during the foot patrolling in General Nakar Watershed

⁴Source: New Centennial Water Source - Kaliwa Dam Project Environmental Impact Statement (EIS)

Link: https://emb.gov.ph/wp-content/uploads/2019/08/Kaliwa-Dam_EIS.pdf

Non-East Zone

Nabaoy Watershed (Boracay Water)

Management Action:

Planted 350 Maguilomboy, Tabao, and Baslayan seedlings, which were brought from Nabaoy Forest Farmers Development Association (NAFFDA), as part of the adopted 40 hectares in Nabaoy Watershed

Luyang Watershed (Cebu Water)

Management Action:

Planted 1,500 Narra and Mahogany seedlings together with stakeholders

Pan-As Hayiban Watershed (Calbayog Water)

Management Action:

- Planted 625 Cacao, Coffee, Toog, Guyabano, Caiomito & Pili trees in the adopted 1.25 hectares per year. This is in partnership with DENR, the Protected Area Management Office, Calbayog City Water District, and the Calbayog LGU
- Forest patrolling through DENR

Laguna Water

Management Action:

- Planted 500 guyabano and cacao in Silang, Cavite for groundwater recharge



Tree planting with our employees and stakeholders in Pan-As Hayiban, La Mesa, Nabaoy and Luyang watersheds.

Total Trees Planted

Watershed	Years Covered	Hectares Reforested	Total Number of Trees Planted
Ipo Watershed	2006-2023	878	379,868
La Mesa Watershed	2008-2023	1,172	470,429
Upper Marikina Watershed	2010-2023	907	566,813
General Nakar Watershed	2018-2023	129	65,353
Nabaoy Watershed	2013-2023	28	67,371
Clark Water	2014-2023	9	7,640
Laguna Water	2014-2023	9	4,520
Pan-As Hayiban Watershed	2021-2023	4	1,875
Luyang Watershed	2022-2023	3	2,500
Estate Water	2023	1	200
Total		3,139	1,566,569

2023 Watershed Accomplishments

Business Unit	Watershed/ Location	Protected Area, ha	Area Planted, ha	Number of Trees planted	Species of planted trees
East Zone	Ipo Watershed	6,600 ⁵	150	60,000	Narra, Kupang, Palosapis, Dungon, Malamangga
	La Mesa Watershed	2,659 ⁶	75	30,000	White Lauan, Yakal, Palosapis, Red Lauan, Malaruhat, Bitanghol, Kalumpit, Makaasim, Sandal wood, Bitag, Lago, Banaba, Tindalo, Malapapaya, Libas
	General Nakar Watershed	162,613 ⁷	19.4	9,719	Agoho, Adwas, Amamaho, Bagtikan, Balobo, Bamboo, Batikuling, Bitag, Botong, Caimito, Guyabano, Kalubkob, Kamagong, Kamansi, Kape, Katmon, Lauan, Lipote, Malabayabas, Malaruhat, Mangga, Nangka, Narra, Putting Paa, Rambutan, Santol, Talisay, Tanguile, Tuai, Water Tree
Boracay Water	Nabaoy Watershed	20	0.2	350	Maguilomboy, Tabao, and Baslayan
Calbayog Water	Pan-as Hayiban Watershed	2.5	1.25	625	Cacao, Coffee, Toog, Guyabano, Caiomito, Pili
Cebu Water	Luyang Watershed	-	1.8	1,500	Narra, Mahogany
Clark Water	Clark STP		1.1	730	Ylang Ylang, Dama de Noche, Narra
	Villa Maria	7.75	-	-	
Laguna Water	Laguna Lake	-	0.75	500	Guyabano, Cacao
Estate Water	Anvaya Cove	-	0.5	200	
Total		171,902	250	103,624	

⁵ Through Bantay Gubat⁶ Through ABS-CBN Foundation's Bantay Kalikasan⁷ Through SIAD Project of Gen. Nakar; Includes protection of Kaliwa, Kanan, Umiray and minor watersheds