



Country /City Philippines
University / School University of the Philippines Diliman / College of Architecture
Academic year 2021-2022
Title of the project Miraculous Hills Subdivision: Creating a Comprehensive Management Plan for a Community Housing Development
Authors V.M.P. Abiño, J.E.P. Asas, A.S. Barrion, J.A.P.D. Divinagracia, J.P.M. Guzman, E.J.C. Macapagal, A.L.S. Mutia, M.A.M. Peralta

TECHNICAL DOSSIER

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Title of the course	Archi 211: Environmental Landscapes (From Fragile Landscapes to Agile Landscapes)
Academic year	2021-2022
Teaching Staff	Nappy L. Navarra, D.Eng. and Cathe Desiree S. Nadal, Ph.D.
Department / Section / Program of belonging	Environmental Landscapes Studio Laboratory / Master of Tropical Landscape Architecture Program
University / School	University of the Philippines Diliman / College of Architecture



Written statement, short description of the project in English, no more than 250 words

The Miraculous Hills Subdivision's current site development plan has been approved by the local government units, but based on the Environmental Risk Assessment Report in 2010, some parts of the development are too steep and should be further planned carefully to maximize the site's assets and avoid problems in the future. The project aims to develop a comprehensive management plan focusing on four major planning development areas: ecotourism planning, livelihood planning, disaster risk management planning, and solid waste management planning. The ecotourism planning showcases the local extraordinary culture, distinctive architecture, and solitary experience, by creating sustainable designs inspired by the community identity, by integrating recyclable and locally available materials through construction, and by creating a tourism destination that blends with nature. The livelihood planning presents short-, medium-, and long-term strategies to help the local residents achieve economic stability by maximizing the site's assets and opening opportunities for future development. The disaster risk management planning involves mapping of the current site characteristics and developing plans for vegetation for soil stability, stormwater collection and management, evacuation planning, and community participation. Finally, the solid waste management planning involves developing a specific site location for waste collection, recycling, and composting, and incorporating social programs that encourages community involvement to create a healthy, sustainable, and net-zero environment.

For further information

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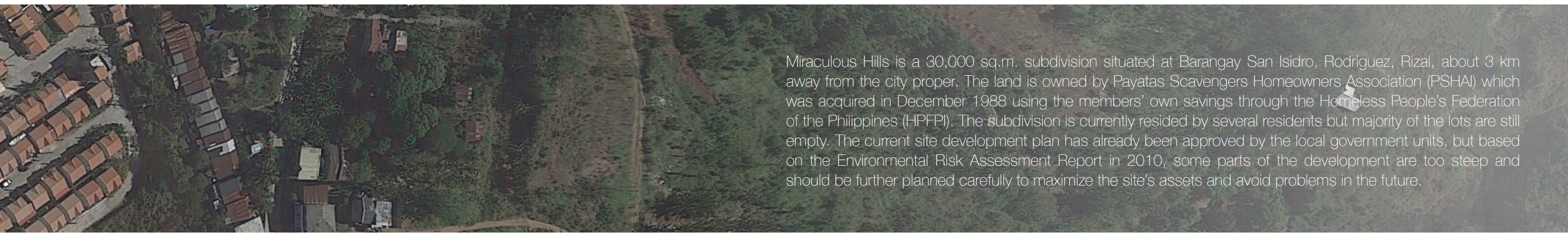
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Barcelona October 2023

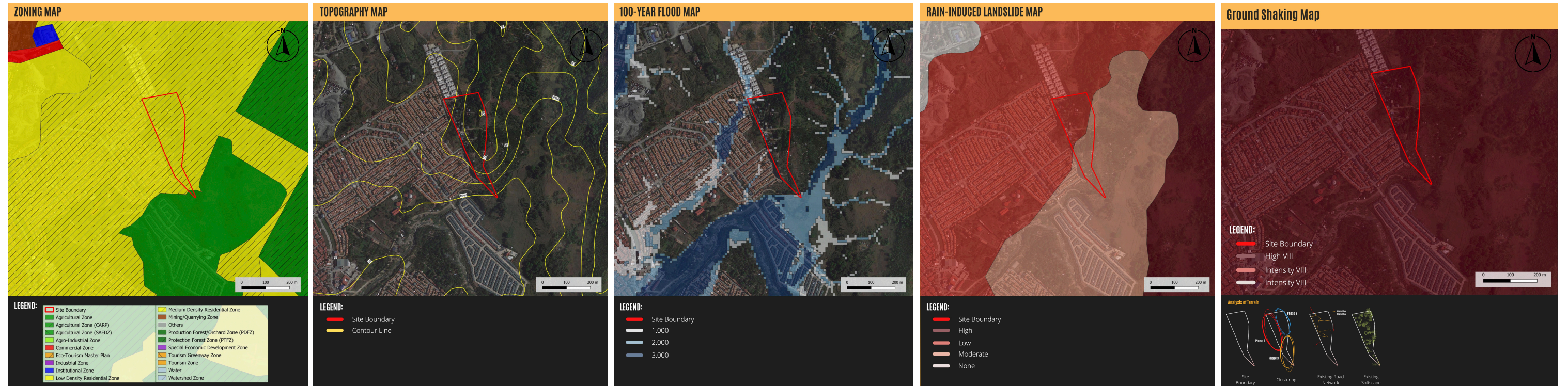
SCHOOL PRIZE

about the site



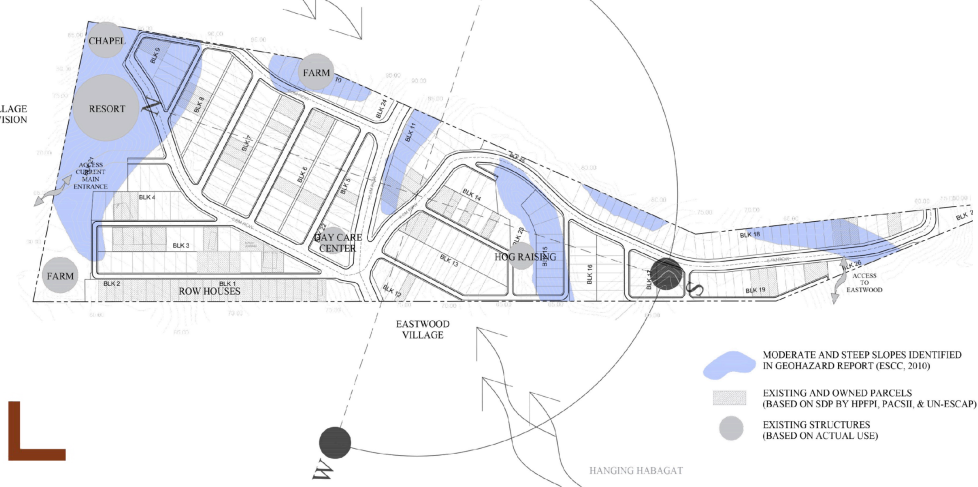
Miraculous Hills is a 30,000 sq.m. subdivision situated at Barangay San Isidro, Rodriguez, Rizal, about 3 km away from the city proper. The land is owned by Payatas Scavengers Homeowners Association (PSHA) which was acquired in December 1988 using the members' own savings through the Homeless People's Federation of the Philippines (HPFPI). The subdivision is currently resided by several residents but majority of the lots are still empty. The current site development plan has already been approved by the local government units, but based on the Environmental Risk Assessment Report in 2010, some parts of the development are too steep and should be further planned carefully to maximize the site's assets and avoid problems in the future.

[macro] site analysis

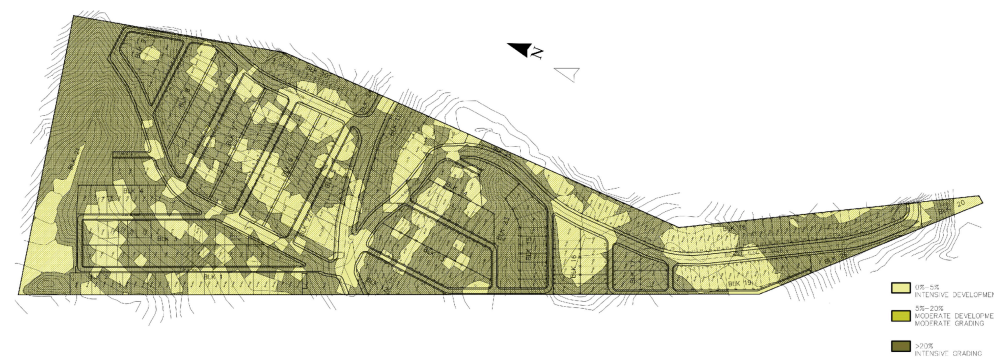


[micro] site analysis

hazard mapping



slope analysis



existing site conditions



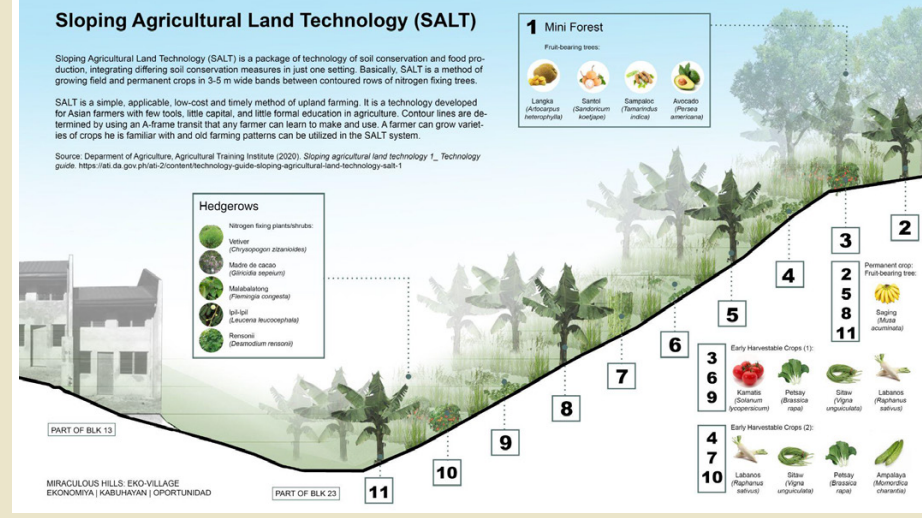
ecotourism planning

livelihood planning

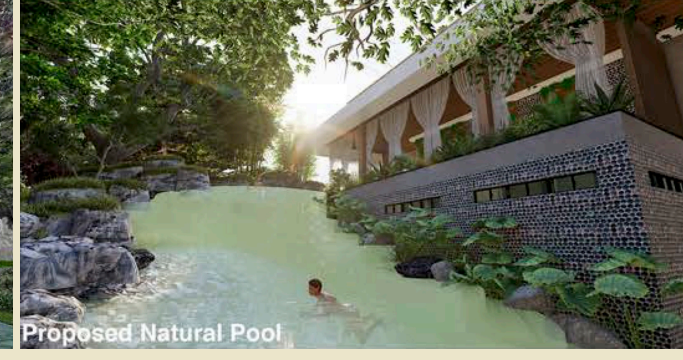
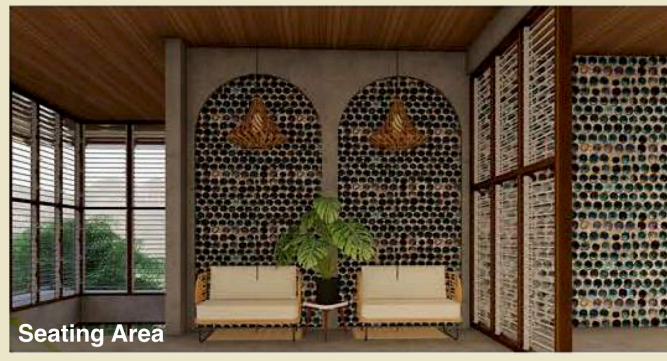
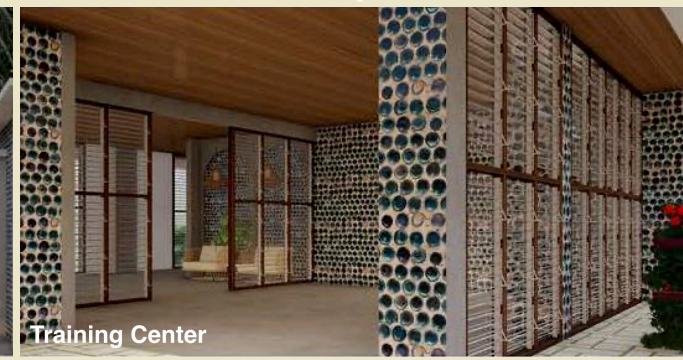
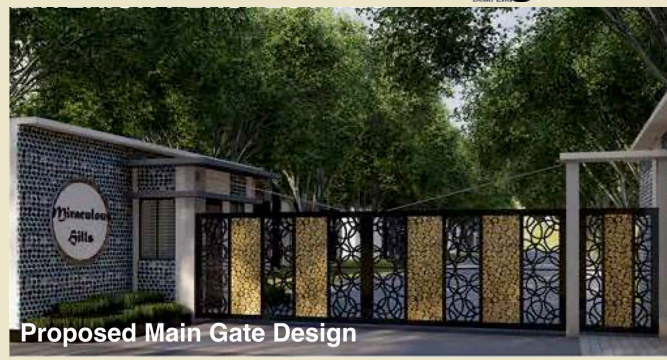
SITE PROFILE
 Location: Miraculous Hills Subdivision
 Brgy. San Isidro, 1860 Rodriguez, Rizal,
 Metro Manila, Philippines
 Target No. of Households: 315 Households
 Total Area: 30,000sqm
 Developer: Ang Payatas Scavenger's Home Owners Association, Inc. (APSHA)



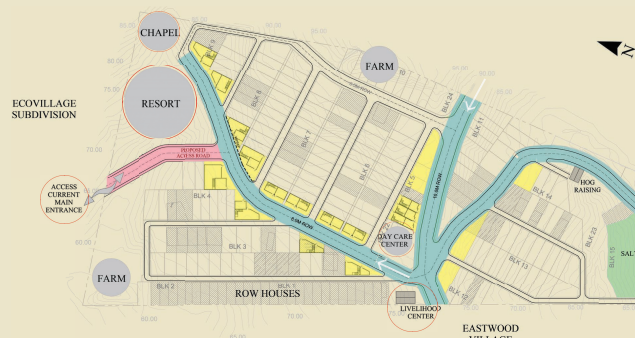
- 1 Main Gate
- 2 Terminal
- 3 Mango Orchard
- 4 Green Roof Cafe
- 5 Playground
- 6 Amphitheater and Basketball Court
- 7 Playground
- 8 Netting Adventure
- 9 Souvenir Center
- 10 Existing Multipurpose Hall
- 11 Existing Chapel
- 12 Playground
- 13 Playground
- 14 Existing Pool and Cottages
- 15 Training Center (Resort Building)
- 16 Outdoor Kawa and Camping Grounds
- 17 Visitor Center
- 18 Exclusive Pool
- 19 Chapel
- 20 Homestay Villas



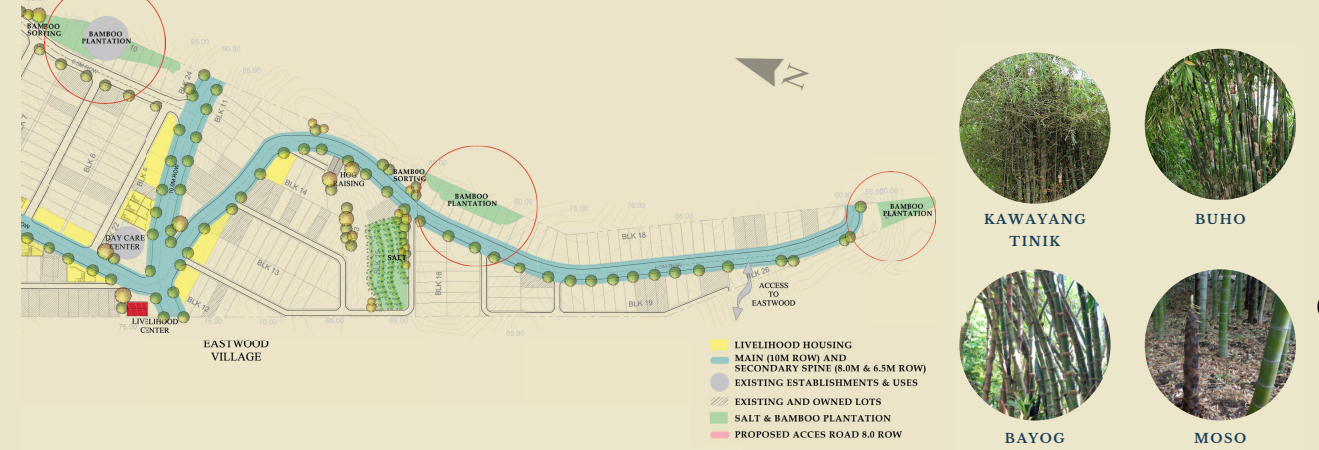
Row	Designation	Tree/Plant	Advanced Planting Month	Maturity	Projected Harvest Month
1 (High)	Mini forest	-	-	-	-
2	Fruit bearing tree	Saging	-	-	-
3	Permanent crop	Kamatis (Tomato)	January	55-65 DAP	Early March
4	Early Harvestable Crops (1)	Patlaya (Pineapple)	March, April, May	25-30 DAP	April, May, June
		Sitaw (Cucurbit)	July, September	60-65 DAP	September, November
		Labanos (Soybean)	November	45-65 DAP	December
5	Early Harvestable Crops (2)	Labanos (Soybean)	January	45-65 DAP	February
		Sitaw (Cucurbit)	March	60-65 DAP	May
		Patlaya (Pineapple)	June	25-30 DAP	July
6	Permanent crop	Amplaya (Rubi)	July, October	60-75 DAP	September, December
7	Fruit bearing tree	Saging	-	-	-
8	Early Harvestable Crops (1)	Kamatis (Tomato)	January	55-65 DAP	Early March
		Patlaya (Pineapple)	March, April, May	25-30 DAP	April, May, June
		Sitaw (Cucurbit)	July, September	60-65 DAP	September, November
9	Permanent crop	Labanos (Soybean)	November	45-65 DAP	December, January



sloping agricultural land technology (SALT)
 maximizing profit through efficient and sustainable agricultural practices



livelihood alleys
 zoned roads for markets and livelihoods



- HATIN SA MALILIT NA SEKSYON**
- ICARBONIZE SA KILN/ APUYANG PATUYUAN 900-1000 DEG CELSIUS 2-3 HOURS**
- PANATILIHIN ANG CHARCOAL SA LOOB NG PATUYUAN NG 28-30 DAYS**
- DURUGIN/ IPULVERIZE ANG ULING PARA MAGING POWDER**
- ACTIVATED CHARCOAL POWDER**
 PHP 100.00/ 500g
- AIR PURIFIER (PANG-LINIS NG HANGIN)**
 PHP 150.00- 200.00/bag
- SABON**
 PHP 90.00/ sabon

bamboo plantation + production + processing
 the bamboo economy as avenue for sustainable economic development

SHORT TERM

economy
 permanent source of income

MEDIUM TERM

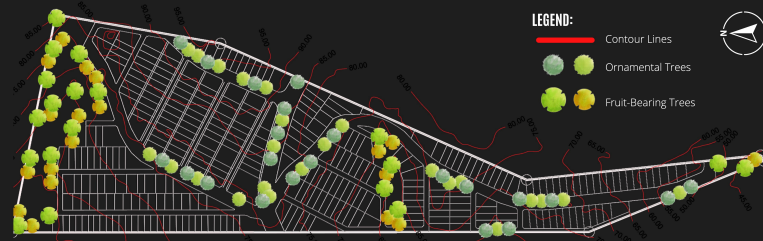
livelihood
 financial stability

LONG TERM

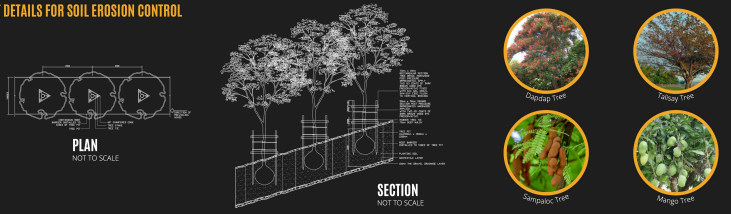
opportunities
 sustainable economic development

disaster risk management

Vegetation for soil stability

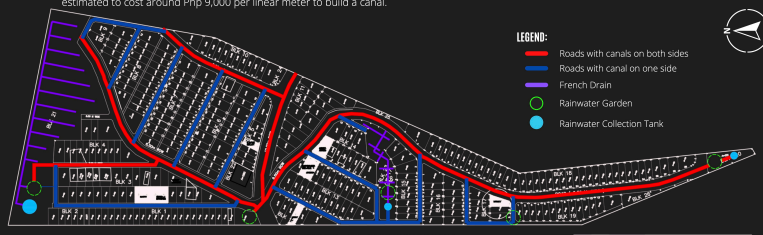


TREE PIT DETAILS FOR SOIL EROSION CONTROL

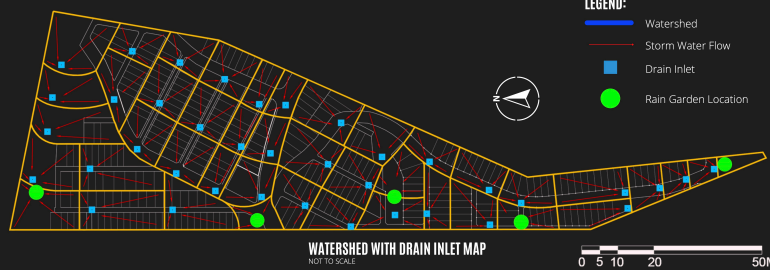
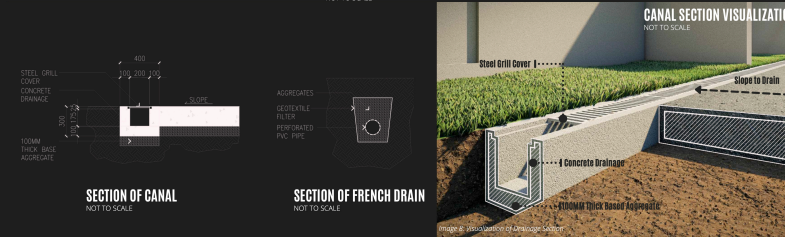


Stormwater collection and management

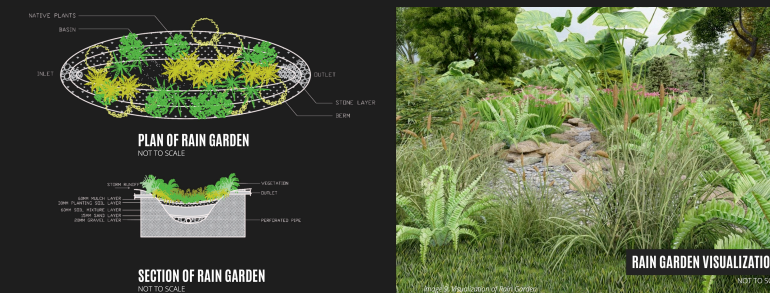
To further control the soil erosion that may happen in the community, it is determined that stormwater should be collected and managed. Luckily, the site has a network of canals which is a great opportunity to serve as an entry point for a community rainwater collection system. Using the proposed site development plan provided by TAMPEI, we have recommended an extensive canal and piping network in collecting and managing rainwater. It is estimated to cost around Php 9,000 per linear meter to build a canal.



PIPING AND DRAINAGE LAYOUT NOT TO SCALE

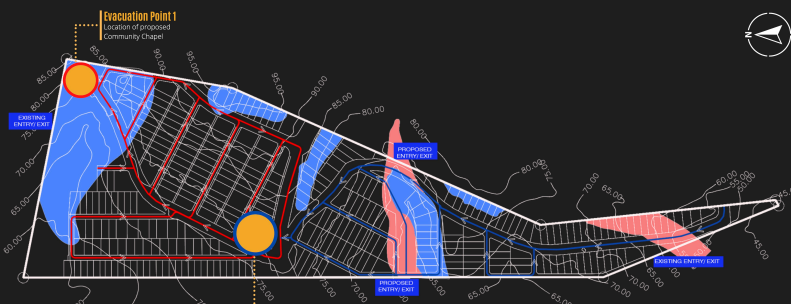


WATERSHED WITH DRAIN INLET MAP NOT TO SCALE

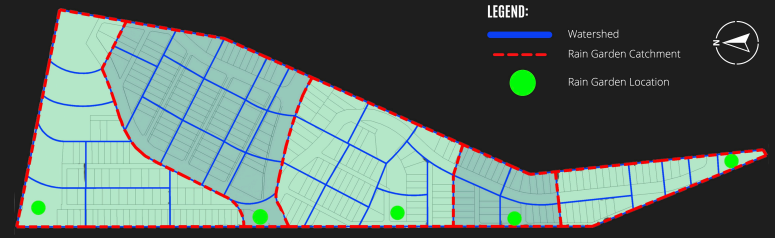


Evacuation Plan

The site is relatively elevated, making the community susceptible to strong winds. An evacuation plan is proposed to prepare them for the possible worst outcome. The evacuation center must be located where it will be shielded from strong wind, and relatively safe from landslide and flooding.



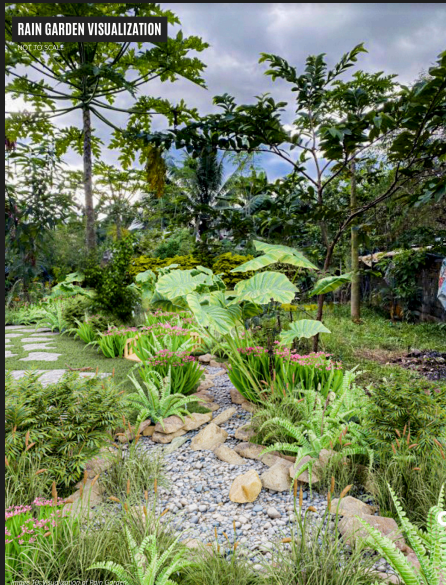
Rain garden will also be utilized for the rainwater collection. These rain gardens will be placed strategically to areas that are identified as watersheds. The site was divided into 4 major watershed catchments, having its own rain garden as its detention basin. The rain gardens have estimated areas ranging from 90-150 sqm, its depths are at 200mm, and its rainfall capture is 1 1/2". Furthermore, to enhance the stormwater collection of these rain gardens, french drains will be installed underneath them so that once the amount of runoff stormwater exceeds the carrying capacity of these rain gardens, the french drains will collect these rainwater to be stored in the rainwater collection tanks.



RAIN GARDEN CATCHMENT AREA MAP NOT TO SCALE

Aquaculture is one of the targets of the community. They plan on cultivating fish by summer so they built part of the canal with that in mind. This is also a good opportunity to utilize the rainwater collected from the canals. To provide better facilities for aquaculture, we recommend that it should be wider than the ones present in the site. However, this topic is outside the scope of this paper. It is also recommended that the pond for aquaculture should not be connected to the canal system and must be independent from it. The proposed rainwater collection tank can be connected to the "pond" to provide water.

Finally, another use of collected rainwater is for crop cultivation. A small plantation of crops is already present in the community. With the collected rainwater from the canals, this small plantation can be more robust. Watering of crops can be facilitated by yet again perforated pipes connected from the rainwater collection tank. Alternatively, water sprinklers can also be installed.



KEYPLAN OF RAIN GARDEN LOCATION NOT TO SCALE

solid waste management

