

Executive Summary

This section provides an overview of the EIA conducted by Team B on the proposed SM City Dasmariñas project. It also provides brief summaries of the chapters of the EIS on the project. The format presented in DAO 96-37 was followed for this executive summary.

A. BRIEF INTRODUCTION

The EIA is mandated as a requirement for all environmentally critical projects or projects in environmentally critical areas. As such, the school of environmental science and management offers students of environmental science the opportunity to gain knowledge and experience on all aspects of the EIA process particularly the preparation of an EIS through the course ENS 296 (Environmental Impact Assessment).

For the summer term 2002, Team B of ENS 296 was given the chance to prepare an EIS for the proposed SM City Dasmariñas project.

B. BRIEF DESCRIPTION OF METHODOLOGY AND PROFILE OF EIA TEAM

1. Approach and Methodology

The participatory rapid rural appraisal approach was employed in the gathering of baseline data. A consensus approach was adopted by the team in making decisions in the conduct of the EIA.

Key informants and stakeholders were interviewed. Secondary data was gathered from agencies in the municipality and the library. The team was also guided by procedures and requirements set by DAO 96-37. The following major activities were undertaken by Team B:

1.2. Scoping Process

An initial table scoping was done by the team before going to the project site. In this activity, approach, methodology, expectations and anticipated issues and concerns were discussed and concretized based on large part on the project description documents given to the team.

Public scoping was not done by the team because two public hearings had been previously conducted by the project proponent. The group obtained collected the minutes of the public hearing as part of the real scoping process.

1.3 Baseline Data Gathering

The preliminary activities include the organization of the team, collection of relevant secondary data, field reconnaissance, and formulation of guide questions and an SIA questionnaire, selection of respondents and identifying key informants. Primary data was gathered through interviewing of respondents and key informants, observing biophysical characteristics and on field initial analysis and formulation.. Actual testing of the physical characteristics of water and soil were done to empirically validate some of the parameters that

were reported in the actual EIS. The group also employed the transect line method in counting/determining the species present in the project area.

Secondary data obtained include the maps, historical information, physico-chemical data, land use, topography, and traffic data.

1.4 Impact Assessment

The possible environmental impacts of the project (pre-construction, construction, operation, and abandonment) were identified. The sources of impacts were also enumerated for the purpose of evaluating the activities that could possibly be detrimental to the environment. Impacts were classified as biophysical or socioeconomic impacts. The duration of the effect of the impacts was determined. Impacts were evaluated as to their significance or non significance. Some existing conditions collected from research and literature were used to predict the possible impacts. Professional judgment was the basis for almost all predictions made. Enhancement measures were identified for positive impacts and mitigation measures were established for negative impacts.

1.5 Environmental Management Plan

The environmental management plan was constructed based on the impact assessment. It includes a mitigation/enhancement plan, a risk management plan, a social development plan and a monitoring plan. The plans are summarized in table form.

1.6 EIS Preparation

The format prescribed in DAO 96-37 was followed in the writing of the EIS. A topical outline was formulated which include the Executive Summary, Introduction, Project Description, baseline Environmental Conditions, Impact Assessment and Mitigation, Social Impact Assessment, Economic Analysis, Environmental Risk Assessment, Environmental Management Plan, Environmental Guarantee and Monitoring Fund Proposal, and the necessary attachments and annexes.

2. Profile of EIA Team

The EIA Team B is a multidisciplinary group composed of master and doctoral students enrolled in ENS 296 (Environmental Impact Assessment: Perspective from the Natural and Social Sciences), Summer SY 2001-2002. The course is administered by the School of Environmental Studies and Management (SESAM) and supervised by a team of professors of various disciplines of the University of the Philippines Los Baños. The coordinator of ENS 296 is Dr. Nicomedes Briones. The members with their line of expertise are as follows:

- | | |
|------------------------------|----------------------------------|
| 1. Crisostomo, Lisa | <i>Business Economics</i> |
| 2. Gomez, Norma U. | <i>Agricultural Economics</i> |
| 3. Joshi, Tirtha Roj | <i>Forestry</i> |
| 4. Khatiwada, Lila Kumar | <i>Rural Sociology</i> |
| 5. Kim, Ik-Bae | <i>Development Communication</i> |
| 6. Masangkay, Julie-Marie I. | <i>Education/Public Affairs</i> |

7. Montibon, Elson R.	<i>Chemical Engineering</i>
8. Onkaew, Nantaporn	<i>Fisheries</i>
9. Paudyal, Ram Babu	<i>Forestry</i>
10. Sah, Shrawan Kumar	<i>Agronomy</i>
11. Sia Su, Glenn	<i>Public Health</i>

C. SCOPE AND LIMITATION OF THE EIA

Due to the constraints of time, resources and the distance of the project site from UPLB, the team did not undertake more sophisticated laboratory tests of air, water and soil samples. Most data came from secondary sources particularly records from the municipality agencies. Although the team came up with a research design for the social impact assessment, only 16% of established population size was interviewed using the designed questionnaire because of lack of time.

The team also focused specifically on the primary impact area which is the project site itself.

D. BRIEF PROJECT DESCRIPTION

The proposed project of SM Prime Holdings, Incorporated will involve the construction of a three-storey commercial building along Governor's Drive, Sampaloc 1, Dasmariñas, Cavite, referred to as SM City– Dasmariñas.(See Figure 2-1) The project will be developed in a property with a total land area of 101, 721 square meters. This establishment will serve primarily the population of Dasmariñas, Cavite and the nearby communities. The proposed project will incorporate other major important features and amenities of a one-stop shop mall such as the supermarket, shops, and amusement centers.

The project aims to:

- generate employment in the area during the construction and operation stages,
- stimulate economic activities in the area particularly on retail trade considering the project's popularity and consumer appeal, and
- provide an alternative venue for recreation by providing one stop facilities and services for retail shopping, recreation, personal necessities, and assemblies for public interest.

2.1 Current Status of the Project

The actual EIS (Environmental Impact Statement) was submitted to the DENR for the review process as a standard procedure before obtaining the Environmental Compliance Certificate. Based on the interview conducted by the group with the municipal planning officer and the mayor, pertinent documents have not yet submitted to their office. As of this moment, no construction has been made in the project area.

The schematic plans for the project have been completed. Appropriate soil investigation was conducted in April 2001 while the topographic survey and relocation of property monument were already completed. The project is now in the process of securing all

relevant Government permits such as the Environmental Compliance Certificate (ECC), Building Permits, etc. All permits were expected to be secured by the first quarter of 2002, in order to proceed with the bidding of construction works.

The general construction works consisting of foundation, superstructure, and roofing system should be finished within 12 months.

Architectural works will commence when almost 40% of the structural works has been completed. Airconditioning systems will be installed within the same period while escalators and elevators will be install on the 7th month.

Plumbing, fire protection and construction of sewage treatment plant will proceed within a period of nine months. Simultaneously, the theater equipment will be installed by the 18th month.

Basic project information is shown in the table that follows:

BASIC PROJECT INFORMATION	
Project Name	▪ SM City – Dasmariñas
Location	▪ Barangay Sampaloc 1, Pala-Pala Dasmariñas, Cavite
Project Owner	▪ SM Prime Holdings, Inc.
Office Address	▪ Room 323, Makati Stock Exchange Building, Ayala Avenue, Makati City
Contact Persons	▪ Hans T. Sy, Senior Vice President SM Prime Holdings, Inc. Telephone No. 633-6615
Total Surface Development Block	▪ 101,721 square meters
Total Area to be Opened for Civil Works	▪ estimated floor area of 126,962.45 square meters distributed among three levels
Parking space	▪ 2,189 open parking slots
Estimate of Total Cut Soil Volume	▪ approx 77,000 cubic meters
Total Manpower Requirement	
▪ Construction	▪ 1,330 technical and manual laborers.
▪ Operational	▪ Minimum of 2330 personnel
Estimated Volume of Daily Water Requirement	
▪ Construction	▪ supplied through a deep well source. Estimated 50 cubic meters / day,
▪ Operation	▪ 329 cubic meters from DWD and backup deepwells
Power Supply	▪ the Manila Electric Company

Sanitary and Plumbing System	<ul style="list-style-type: none"> ▪ power requirement estimated at 4.0 to about 6.0 MW ▪ in accordance with the National Plumbing Code of the Philippines and the specifications required by the Sanitary Engineer. ▪ in strict accordance with the required and advisory provisions of the National Fire Protection Act 13 and 14 ▪ Wastewater will be diverted into a wastewater treatment plant designed for 500 cubic meters per day flow. ▪ Solid waste consisting of papers, bottles, plastics and food wastes, etc. will be managed and sorted at a garbage house provided with waste segregation chambers. Waste haulers shall be hired to collect the segregated garbage. The residual wastes which cannot be recycled will be disposed of in accordance with the regulation of the Local Government Unit.
Fire Protection System	
Waste Production Scheme	
Total Project Cost	<ul style="list-style-type: none"> ▪ estimated at P 1,273,192,500.

E. BRIEF DESCRIPTION OF BASELINE ENVIRONMENTAL CONDITIONS

1. Physical Environment

1.1 Physiography

Dasmariñas is a municipality of the province of Cavite. It is situated about 32 kilometers south of Manila and 12 kilometers from the provincial capitol, Trece Martirez City. It is bounded on the North by the Municipality of Imus, on the South by Silang, on the East by the Municipalities of General Mariano Alvarez and Carmona and on the West by General Trias.

1.2 Topography

The Dasmariñas area is characterized as partly lowland and partly hilly, characteristic also of the project area. Around 18.61% of Dasmariñas area is strongly sloping to mountainous and 8.62% of the entire area is gently sloping. The biggest percentage of 50.59% of the total land area exhibits slopes that range from 2.6 to 5.0%.

Several rivers, creeks and water tributaries in the area drain to the Manila Bay.

1.3 Climate

Dasmariñas is classified under Type 1 climate, which is characterized by two pronounced seasons: the wet season and the dry season. The wet season is observed during the months of May to December and the dry season occurs during the months of January to

April. During the heavy rains, the rivers, streams and brooks usually swell and overflow but recedes easily.

Rainfall

Rainfall records show that in the rainy season which starts in the month of May peaking in August, the monthly amount of rainfall measures at an average of 98.4 mm. In December the monthly amount of rainfall falls to 40.7 mm. The wettest months observed are the months of July, August and September.

The monthly rainfall for the entire year of 2000 ranged from 5 mm to 501.8 mm. The lowest monthly rainfall was in the month of February (5 mm) and the highest monthly rainfall was observed in the month of August (501.8 mm).

Temperature

Temperature ranges from about 60⁰F to 90⁰F. Further south of the town proper where there is higher elevation, the temperature drops to a low of 50⁰F especially during December and January..

Prevailing Winds

Wind speed varies from 2 to 3 meters per second and the blowing direction is from the east to southeast or from the southwest. The east-southeast monsoon prevails over the area especially for the months of December to May while southwesterly winds blow during the rainy months of June to August where heavy downpours are observed.

1.4 Soil - Physical and Chemical Characteristics

Dasmariñas has about 11 basic soil units. The soil of the project site is characterized as clay loam and generally the soil in the area is found to be suitable for planting diverse crops. No apparent soil erosion in the project site has been previously observed. This is because the ground surface is generally flat to slightly sloping towards the rear side of the property. The clay loam soil texture and structure are characteristically not prone to erosion.

1.5 Geology

The geology of the project site shows types of 2 layers of highly weathered, weakly cemented volcanic ash material and sedimentary rock

Records show that Dasmariñas has no fault line constraints although the project site is within the 150-kilometer radius of the earthquake generators - the Philippine Fault, the Manila Trench, the East Luzon Trench, the Lubang Fault and the Casiguran Fault.

1.6 Hydrology

All the rivers in Dasmariñas appear to originate from Taal Lake. Several small rivers, streams, and creeks traverse the Dasmariñas area. The Paredes creek and the Pala pala River is situated within the project site. One of the water tributaries is paralleled at the eastern

boundary and the other at the northern boundary of the property. The water channel measures about 16 meters in width and the depth ranges from 5-10 meters high.

The Dasmariñas water supply is generally obtained from spring and groundwater. There are a total of 56 one of which is non-operational. Various block faucets were installed to serve the families who could not afford the cost of individual pipeline connections. The pumping station provides water to about 442,572 persons at present. The production capacity of the pumping stations installed is 65,591.60 cubic meters per day or 23,612,976 cubic meters per year.

Several water filling stations in the different barangays of the municipality serve as other sources of water supply of the community. Industrial establishments, institutional entities and commercial establishments existing in the municipality draw water from the Dasmariñas Water District's water supply system.

1.7 Groundwater

The groundwater table in the area is about 3.5 to 10 meters deep. Static water level reading occurs at more than 6 meters below the ground level. As a consequence, wells constructed at depths greater than 20 meters are common and are officially classified by the National Water Resources Board (NWRB) as shallow well areas. The shallow wells in this town have an average discharge ranging from 0.32 lps to 1.26 lps. Based on the statistics of the Dasmariñas Water District, the groundwater table of the municipality is declining every year however; no report of saltwater intrusion has been reported.

1.8 Water Quality

Several small rivers, creeks and tributaries traverse the Dasmariñas area and all of these naturally drain to the Manila Bay. The Dasmariñas Water District periodically examines the physical and chemical parameters of the groundwater sources. Water sampling at the Pala pala river and the Paredes creek were collected by the team through grab sampling. Analysis shows that waters from these creeks are well within the criteria set for Class D Waters

1.9 Air Quality

Samplings of the ambient air quality were taken at three stations within the project area on March 24, 2001. The results of the ambient air quality at the project site indicated that high amounts of total suspended particulates (TSP) are observed in Station 2. The increase in the observed TSP levels may indicate or trigger the possible occurrences of health ailments for people who are continuously exposed by such particulates in the atmosphere.

1.10 Noise Levels

The noise levels at the project site belong to Class B (commercial) standard of 65 dB (A). This standard is supposed to be observed during the entire day (9:00 am to 6:00 pm).

Noise levels taken at various locations around the project site on March 24, 2001 from 9:30 am to 2:00 pm show that the exceedance of noise levels observed near the Governor's

Drive and the Aguinaldo Highway may be attributed to the passing vehicles in these two major thoroughfares.

1.11 Existing Land Use

The total land area of 8,234 hectares of the municipality is divided into several land uses: urban/built-up areas, industrial areas, agricultural areas, open grasslands and water bodies. Urban development constitutes about 32.12% of the total land area. This comprises residential, commercial, industrial, institutional, agro-industrial, parks and recreational areas as well as the cemetery, roads and special land uses of the municipality. The largest concentration of urban development is at the central and southwestern portions.. The northern portions are fast developing into residential areas while the southern and eastern portions are considered as the industrial built-up areas of the municipality however, portions of Sampaloc 1 where the project will be located are also fast becoming subdivision areas.

The main roads are the Molino Road (Carmona – Bacoor Road) on the north; the Emilio Aguinaldo Highway (Imus –Tagaytay City Road) on the south; the Governor’s Drive (Carmona – Ternate Road) on the east and the Salitran Road (Salitran – Salawag Road) on the west.

2. Biological Environment

2.1 Terrestrial Flora

In the primary impact area, the dominant vegetations are grasses but with sparse fruit bearing trees and lesser known forest species like shrubs and bushes are present near the Pala pala river and the Paredes creek. The complete list of vegetation identified from the project site is shown in Table 3-6.

The dominant grasses present in the project site are the *Saccharum spontaneum* and the *Imperata cylindrica*. Other fruit bearing and economically important tree species were also observed from the project site.

2.2 Terrestrial Fauna

The most frequently observed fauna in the project site are the birds found in the trees growing near the water bodies. These avi-faunal species are: Luzon little crow (*Corvus eucasierra madrenis*), Elegant Titmouse (*Parus elegans elegans*), Stripped headed creeper (*Rhabdornis mystacalis mystacalis*) and the Philippine Bulbul (*Hypsipetes philippines philippines*).

From interviews done with the nearby residents, other animals that are present in the project site are snakes, turtles, insects and fishes.

3. Socio-Cultural, Economic and Political Environment

3.1 History of Dasmariñas

Dasmariñas got its name from a certain Don Gomez Perez Dasmariñas and was formerly known as Perez Dasmariñas. It was previously a barrio of Imus until 1867.

The first settlers of this municipality arrived in 1861 and were believed to be the families of Gil Tirona, Vicente Guevarra, Eleuterio Geda and Eustaquio Paulme. In 1905 under the American regime, the town of Dasmariñas became again a barrio of Imus and remained a part of the said town until 1907 when it was again separated as a municipality. In that same year, the name Perez was dropped.

3.2 Population

The Municipality of Dasmariñas is composed of 73 barangays. Its total land area of 8,234 hectares has a population density of 32 persons per hectare. (NSO 1996) Based on the 1995 NSO census, Dasmariñas has a population of 262,304 persons. Barangay Paliparan has the highest population. The total population for Barangay Sampaloc I where the project site is to be located, is registered at 3,038. The sex ratio stands at 97 males to 100.

3.3 Agriculture

The traditional economic base of the municipality is agriculture. Agriculture occupies an area of 2,045.56 hectares or 22.10% of the total land area and only 949.42 hectares of land or 46.41% are devoted to crop production. The remaining agricultural lands of the municipality have been devoted to production of livestock, poultry and swine while other areas are now idle and barren for years. The irrigated areas of the municipality are serviced by irrigation pumps that draw water from Barcadero, Makiling and Luksuhin dams located in the Barangays of Paliparan, Salitran and San Agustin respectively.

3.4 Crop Production

Rice occupies an area of 253.30 hectares of the total agricultural area. The remaining agricultural land area is devoted for food crops like fruits and vegetables. The leading fruits being produced in the municipality are mangoes and pineapple. The area planted to sugarcane in the municipality totals at 1,054.66 hectares.

3.5 Commerce and Trade

Commerce and trade flourish in the areas along P. Campos Avenue, Camerino Avenue, the old public market area, Congressional Road from Salitran through De La Salle College, Salawag area where the newly private dry and wet markets are located, Paliparan II, along Aguinaldo Highway and Pasong Lawin area going to the new public market.

Based on the records of the Business and License Division of the Local Government, there are around 3,166 registered commercial establishments. Of these, 2,206 (69.68%) are engaged in retailing; 731 (23.09%) are in personal, business, and recreational services; 92

(2.91%) are into wholesale; 84 (2.56%) are into banking and finance; 46 (1.45%) are into real estate; and 7 (0.22%) are engaged in insurance.

3.6 Industry

The municipality of Dasmariñas is now experiencing rapid industrial growth. As of 1999, there are 144 industrial establishments distributed in the locality. Most of these industrial establishments are engaged in the manufacture of garments for overseas market, gloves, electrical supplies, aluminum sheets, automotive lights, apparels, greeting cards, home decorations, furniture, hollow-blocks, handicrafts and native products.

3.7 Communication and Transportation

The residents of the municipality of Dasmariñas rely on various agencies for their communication needs. These agencies include the Philippine Postal Corporation, Bureau of Telecommunications, Philippine Long Distance Telephone Co., Globe Telecom, Digital Telephone Co. and many others. Newspapers and magazines of national circulation are likewise available in the municipality and its barangays. AM/FM radio and television programs are also received clearly in the locality.

Transportation is also readily available in the whole part of the municipality especially in the area where the project site is situated. Buses, tricycles, FXs, Vans and public utility jeepneys serve as the main transportation to and from Dasmariñas.

3.8 Education

There are two private high schools and four public high schools operating in the municipality. There are also two private elementary and twenty-one public elementary schools. Several private learning centers are located in the different barangays of Dasmariñas. The municipality boasts a literacy rate of 98%.

3.9 Health Status

For the calendar year 1999, total live births were reported at 6,362 infants. Of these total live births, around 203 have been reported in the Barangays of Sampaloc 1 and V.

The common causes of reported maternal mortalities are due to puerperial sepsis. Among the 1-4 years old age group, the common cause of the children's mortalities are septicemia, cerebral contusion, pneumonia and status asthmaticus. Most of the deaths that occur in the Barangays Sampaloc I and V are due to senility or old age.

The leading causes of morbidity and mortality are attributed to the occurrences of air and water pollution within the locality.

Malnutrition is prevalent among the 0-6 years old group. In Barangay Sampaloc 1, where the project site is located, around 330 children are affected by 1st and 2nd degree malnutrition. The occurrence of malnutrition in the area may be attributed to poverty and the existence of other infections.

Health Facilities and Manpower

Dasmariñas has two Rural Health Units that cover all the barangays located in the municipality. Each barangay in the municipality has its own health station that is being manned by a competent midwife. The Local Government unit supports the needs of the families in these barangays by providing them low-cost medicines and medical services.

A community hospital is situated at Barangay San Esteban. This hospital attends to the medical needs of the residents of Dasmariñas in cooperation with the Rural Health Unit II. This primary community hospital has a ten-bed capacity that is staffed by two (2) physicians, four (4) nurses, three (3) midwives, one (1) medical technologist, one (1) pharmacist, one (1) X-ray technician, one (1) administrative officer, one (1) cook, two (2) laundry workers and one (1) institutional worker. This community hospital is open to the residents of Dasmariñas for general medical services and ambulatory and emergency needs.

Tertiary hospitals are also found in the municipality. The Jose P. Rizal National Memorial Research Center is a 100 bed-capacity non-governmental hospital provides medical services to mostly the indigent families and the low-income groups. The personnel include 28 doctors, 46 nurses and 53 personnel assisting the medical staff

The De La Salle University Medical Center is another private hospital that has a 250-bed capacity that occupies an area of about 5 hectares and offers complete medical services to the residents of Dasmariñas and nearby municipalities. It is staffed by 268 doctors, 161 nurses, 40 midwives, 27 medical technologists, 2 dentists.

Generally, the healthcare facilities and manpower in the municipality of Dasmariñas are adequate to meet the needs of the residents as well as those from nearby municipalities.

3.10 Road Networks

The road networks in Dasmariñas support the town in meeting its functional role as a residential, commercial, industrial and university town center. They are accessible to other adjoining municipalities and can be reached from Manila through the Emilio Aguinaldo Highway from the north and towards Tagaytay City from the south. Another major highway that connects Dasmariñas to its nearby municipalities is through the Carmona-Ternate road also known as the Governor's Drive passing through Pala pala and Langkaan. Other important major road links are Molino Road (Paliparan-Molino Road) going to Bacoor and Zapote; Sabang-Imus Road going to Binakayan; and the Amuntay-Puerto Azul Road going to Governor's Drive.

The local government unit expresses their plans of possible road expansions especially in Barangay Sampaloc I where the project site is to be located.

3.11 Social Welfare

Social welfare services are mainly handled by the Social Welfare Department whose different programs and assistance are geared toward indigents. Services include daycare

centers, PIDI's Rolling Store Project, pre-marriage counseling sessions for would-be couples, death aid assistance, rehabilitation centers, mental institutions and children's centers for mentally deranged patients, drug addicts and street children and an Office of the Senior Citizen Affairs to extend benefits among the elderly citizens.

3.12 Housing

A proliferation of private residential subdivisions such as the Vineyard and the Le Mediterranean have been developed in the last decade. The LGU is implementing the Homesite Acquisition Program to address an emerging squatter problem.

3.13 Sports and Recreation

Dasmariñas has two major parks, playgrounds, and cockpit arena, travel lodge, cottages, swimming pools, amusement centers and recreational facilities which are made available to the public. Sports and leisure activities are being promoted in the municipality to build camaraderie and develop the physical well being of the youth in particular.

3.14 Police Protection Services

The police station of the municipality is situated at Camerino Avenue and a sub-station is located at the Dasmariñas Bagong Bayan-B. Several police and traffic outposts are strategically positioned in the municipality's intersections. At present, about 90 policemen are stationed in the municipality and different barangays have organized their Barangay Tanod Brigades to help maintain peace and order in the locality. The leading crime committed is physical injuries against another person.

3.15 Flood Control and Drainage

The existing drainage system consists of networks of earthen canals and concrete culverts reinforced by drainage pipes constructed on both sides of the street. During heavy downpours, storm water runs off from the barangays Sampaloc, San Agustin, San Jose and Sabang and draining towards the Dasmariñas River. The presence of the network systems provides efficient and satisfactory drainage system especially against the occurrence of flooding in the area.

3.16 Waste Disposal and Sewerage

Solid waste disposal is now an alarming problem for the municipality especially that increasing volumes of waste are being generated every day due to the influx of residential subdivisions and the rapid urbanization occurring in the community. The sewerage system of the municipality is also of concern since at present no centralized sewerage system exists. Not all households have their own septic tanks and pit privies.

3.17 Power and Electrification

The main source of the municipality's power supply is the National Power Corporation with a substation at Barangay San Agustin. Since March 1985, power generated is distributed by MERALCO.

3.19 Political System

The Municipal Mayor, the Vice Mayor and the Sangguniang Bayan Members head the Municipality of Dasmariñas. The different departments and agencies of the municipalities are all under the supervision of the Municipal Mayor. The officials of the present administration all come from the same party.

3.20 Developmental Plans

All the development plans of the local government for the municipality is geared towards urbanization and eventual cityhood. The local government foresees that in the future, the city of Dasmariñas would be a harmonious blend of enterprising migrant population that would contribute to both the city's growth and development as well as attain the goals and aspirations of the municipality for its constituents.

In ensuring a balanced and integrated development of the city, various land uses will be implemented. Environmental sanitation and management is also envisioned as part of the development of the city. A more efficient garbage collection and disposal system, drainage and sewerage system will be implemented to ensure that the environment is properly safe guarded and managed alongside economic development. Industrial development is anticipated to be the backbone of the future city's economic growth. It is predicted that economic growth will provide livelihood to both the migrant population as well as the local residents.

F. MATRIX OF ISSUES AND IMPACTS RAISED DURING SCOPING AND CONSULTATIONS

1. Public Hearings

The proponent conducted two public hearings in fulfillment of the scoping process. The team was not able to attend any of the hearings because these hearings were conducted before the summer term. Representatives from various sectors of the municipality were invited.

The issues and impacts raised by the stakeholders were noted by the proponent and were immediately addressed through explanations, mitigating plans and implementation plans. The issues raised revolved around solid waste generation and management, the fate of the Paredes creek that traverses the project site, safety, and employment opportunities.

Issues/ Impacts Raised by Stakeholders	Mitigating Measures /Response of Proponents	Implementation Plan
<i>Pre-construction / Construction Phases</i>		
<i>Cutting of Trees</i>	Trees will be balled and transferred if they are to be cut More trees will be planted as part of the landscaping	
<i>Construction of the building above the Paredes and erosion of banks could affect normal flow of the Palapala and Paredes creeks</i>	A diversion channel (open or covered) will be constructed Slope protection measures will be instituted to avoid failures in the future Easements will be provided at both creeks.	
<i>Noise disturbance from the construction activities</i>	All equipment with proper and required noise reduction devices (muffler, etc.). High noise-generating activities such as jack hammering, riveting and the like shall be scheduled during daytime hours only.	Construction shall be scheduled from 8:00am until 5:00pm except in cases of concrete pouring where advance notice shall be given to the adjacent establishments.
<i>Impact of construction activities on welfare and safety</i>	Workers will be required to observe safety practices at all times. Hard hats and appropriate personnel safety equipment will be provided for all workers. Safety signs and reminders will be posted in strategic places within the construction area. Regular safety meetings and job training will be conducted. All workers will undergo safety orientation before working on site.	Guardrail, curb guard will be installed. Workers will be oriented on personal safety and conduct, i.e. reporting hazards, injuries, wearing safety gadgets, etc. Gambling drinking intoxicating liquor will not be allowed within the construction site. Workers will be strictly required to observe order in the performance of their duties.
<i>Generation of construction debris and other solid wastes</i>	Collection and recycling of construction wastes. To be offered to junkshops as scrap material.	Stockpile, waste, excess and scrap materials will be hauled out on a daily basis. Recyclable materials will be reused in other projects of the contractor. Other wastes or discarded materials shall be properly stored and disposed of (hauling out in trash bags). All solid waste will be disposed in designated landfill or other areas as designated by the LGU.
Socio-economic Impacts		
<i>Increased employment opportunities</i>	Priority in hiring will be given to qualified locals from the barangay and adjacent community.	Included as part of the contractor's hiring policy Orientation and training will be granted to hired personnel regarding construction management practices and regulations and safety.
Operational phase:		
<i>Water Quality</i>		

<i>Increased pollution load into the creek</i>	Utilization of wastewater treatment plant. Proper and professional operation/maintenance of wastewater treatment plant.	Included as part of the project plans
<i>Water supply</i>		
<i>Increased demand for water</i>	Treated wastewater will be recycled for irrigation and evaporate cooling to reduce freshwater requirements. Water conservation practices will be encouraged and implemented	All tenants shall be required to provide their own sub-meters to encourage water conservation. Planning of trees and other vegetation within the vicinity.
<i>Contamination of water supply with introduction of deepwell and recycled water from the wastewater treatment plant</i>	Cross-contamination will be controlled through the use of separate water lines for the recycled water and deepwell water.	Separate lines and storage tanks shall be provided.
<i>Air and Noise Quality</i>		
<i>Emissions from the operation of the standby generator units.</i>	Regular maintenance will be undertaken to control emission of pollutants. The generator sets will be provided with mufflers and enclosed in the genset room and will be operated in full compliance with DENR regulations regarding noise emissions.	Included as part of the project maintenance
<i>Odor emission from the wastewater treatment plant</i>	The wastewater treatment plant will be regularly operated and will not emit odor.	The plant will be underground and ventilated (20 airchanges/hour). Exhausted air will be “scrubbed” thru activated charcoal filters.
<i>Vehicular emission from the parking space</i>	open parking will be available in the commercial complex	The proposed open carpark is designed utilizing natural ventilation same with the existing carparks of SM
<i>Traffic</i>		
<i>Traffic congestion</i>	A Traffic Management Plan will be designed by the project to consider traffic re-routing at the entrance and exit points of the project. Adequate parking spaces will be made by the project	The traffic scheme will be implemented in accordance with the devised short-term and long-term measures. Additional traffic enforcers will be assigned to minimize if not avoid traffic congestion within the project vicinity.
<i>Operational Phase:</i>		
<i>Geologic Hazards</i>		
<i>Geologic hazards resulting from earthquakes, erosion and siltation</i>	Emergency response measures will be instituted	Building employees and tenants will be trained on a regular basis on actions to be implemented in case of emergencies. The building will be provided with adequate emergency exits provided with signages.
<i>Solid waste</i>		
<i>Solid Waste Generation</i>	Waste generation and recycling program will be implemented to reduce the volume of wastes to be disposed through the municipality’s solid waste management system.	Waste will be segregated in the waste handling facility. Private waste haulers will be hired to recycle/handle solid waste.

<i>Socio-economis Impacts</i>		
<i>Increase in employment opportunities, government revenues and improved social services</i>	<p>The project will provide priority hiring for qualified people from the barangay and nearby community.</p> <p>The taxes from the project will increase the budget allocated for the barangay thus social services can be expected.</p> <p>Support to other social development projects of the barangay</p>	<p>The management will institute its policy the priority hiring of qualified people from the locality.</p> <p>Through the municipal government taxes from the project will provide increased revenues to the Barangay.</p>

Table F-1 Issues/Concerns Raised During Public Hearing

G. MATRIX OF MAJOR IMPACTS, AND MITIGATION/ENHANCEMENT MEASURES WITH SUMMARY DISCUSSION

The team categorized the identified environmental impacts resulting from the project into biophysical and socio-economic components. The temporal effect (short-term, long-term, no effect) of the project on these components was determined through consensus taking. The following table shows that the project will have long term impacts on many of the many of the identified environmental areas.

Table G-1 Impact Areas of the Proposed SM CITY DASMARIÑAS

Environmental Area	Environmental impact		
	No effect	Short-term effect	Long-term effect
<i>Biophysical components</i>			
Soil characteristics	√		
Natural drainage			√
Groundwater depletion			√
Water quality		√	
Air quality			√
Visibility			√
Noise		√	
Natural vegetation		√	
Wildlife		√	
Endangered species	√		
Human health			√
<i>Socio-economic components</i>			
Employment generation			√
Living standard of people			√
Change in population structure			√
Tax revenue of the govt.			√

The predicted impacts in the project phases were analyzed for their chances of occurrence and level of significance. Those with the highest likelihood of occurrence and highest significance are shown in the table below:

Table G-2 Chances of occurrence and level of significance of predicted impacts for the proposed SM CITY DASMARIÑAS

PROJECT PHASES	PREDICTED IMPACTS	CHANCES OF OCCURRENCE	LEVEL OF SIGNIFICANCE
Pre-construction			
<i>Biophysical</i>	Loss of trees and vegetation	-3	S
	Change in microclimate	-3	NS
	Generation of waste	-2	S
	Displacement of flora and fauna	-3	S
	Health hazard	-2	S
<i>Socio-economic</i>	Drastic increase in price of land	+3	HS
	Influx of laborers	-3	S
Construction			
<i>Biophysical</i>	Dust particle in the air	-3	HS
	Noise pollution	-2	S
	Traffic	-3	S
	High water and electricity use	-3	S
	Change in natural flow of water (Due to filling of Pala pala creek)	-3	S
	Health hazards	-3	S
<i>Socio-economic</i>	Employment (unskilled)	+3	HS
	Increased demand of services (water & electricity)	-3	S
	Increased market (food, commodities & raw materials in the vicinity of the project)	+3	S
Operational			
<i>Biophysical</i>	Increase in traffic	-3	HS
	Increase in waste disposal	-3	HS
	Noise pollution	-3	HS
	Air pollution	-3	HS
	Increase water uses	-3	S
	Health hazard from vehicular gas emission& wastewater discharge	-3	HS
<i>Socio-economic</i>	Employment	+3	HS
	Increase taxes for government	+3	HS
	Increase aesthetic value of area	+2	S
	Increase in local tourism	+3	S
	Increase other related business	+3	HS
	Lower income for small enterprises	-3	S
	Increase in population	-2	S
	Increase in crime rate	-2	S
Abandonment			
<i>Physical</i>	Abandoned building	-1	NS
<i>Socioeconomic</i>	Decrease tax revenue	-2	S
	Decrease employment	-2	S

The impacts with weights of +/- 9 and +/-15 will be mitigated or enhanced. The following table shows the impacts with the values mentioned.

Table G-3 Weighted values of impacts to be mitigated or enhanced

PROJECT PHASES	PREDICATED IMPACTS	WEIGHT
Pre-Construction		
<i>Biophysical</i>	Loss of vegetation	-9
	Change in microclimate	-3
	Generation of waste	-6
	Displacement of fauna	-9
	Health hazard	-6
<i>Socio-economic</i>	Increase in price of land	+15
	Influx of laborers	-9
Construction		
<i>Biophysical</i>	Dust particles in the air	-15
	Noise Pollution	-6
	Traffic	-9
	High water and electricity use	-9
	Change in natural flow of water bodies (due to filling of Paredes Creek)	-9
	Health hazard	-15
<i>Socio-economic</i>	Employment (unskilled)	+15
	Increased demand for services (water and electricity)	-9
	Increased market (food, commodities, raw materials in the vicinity of project.	+9
Operational phase		
<i>Biophysical</i>	Traffic	-15
	Waste disposal	-15
	Noise	-15
	Air pollution	-15
	Increase in water uses	-9
	Health hazard from vehicular gas emissions	-15
<i>Socio-economic</i>	Employment	+15
	Increased tax revenue for government	+15
	Increased aesthetic value of area	+ 6
	Increased local tourism	+9
	Increase in other related business	+15
	Lower income for small enterprises	-9
	Change in population structure	-9
	Increase in crime rate	-6
Abandonment		
<i>Physical</i>	Abandoned building	-1
<i>Socioeconomic</i>	Decrease tax revenue	-6
	Decreased employment	-6

H. MATRIX OF ENVIRONMENTAL MANAGEMENT PLAN WITH SUMMARY DISCUSSION

The EMP contains the mitigation/enhancement measures to be accomplished. Due to lack of time for conducting actuarial computations on the cost, cost was not computed. The team identified however, the entity responsible for shouldering the cost. General schedules of implementation were established, to be specified once the project starts. Guarantees are provided measures not accomplished according to EIA penalty and guarantee guidelines.

A summary of the mitigation plan and the monitoring plan is shown in the matrixes that follow:

Table H ENVIRONMENTAL MANAGEMENT PLAN OF SM CITY – DASMARINAS (Pre-construction)

IMPACT DESCRIPTION	MITIGATION/ENHANCEMENT MEASURES	COST OF MITIGATION / ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
1. Pre-construction					
<i>a. Bio- physical</i>					
Loss of vegetation and displacement of fauna	Minimize cutting of vegetation Planting trees on open space	Project	Proponent & contractors	During site preparation	Penalty or cancellation of ECC
Siltation of Pala pala River due to site clearance and excavation	Establishment of silt traps along the river and gullies Proper design of structural foundations	Project	Proponent & contractors	During clearing & site preparation	Penalty or cancellation of ECC
<i>b. Socio-economic</i>					
Increase in land values of surrounding areas Increased government taxes and revenues	Institutionalization of transparent tax collection scheme and monitor regularly	Local government	Local government	At the start of the project	
Influx of laborers	Priority to the local laborers	Proponent & local government	Proponent, contractor & local government	At the start of the project	

Table 9-1 ENVIRONMENTAL MANAGEMENT PLAN OF THE SM CITY – DASMARINAS (Construction)

IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURES	COST OF MITIGATION ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
2. Construction					
<i>a. Bio-physical</i>					
Noise and gas emissions from the operation of heavy equipment and stand-by generator set	Use of well maintained or newly re-conditioned machines for construction Use of high quality diesel fuel oil Use of anti-pollution devices such as mufflers and air filters	Project	Proponent & contractors	Throughout construction	Penalty or cancellation of ECC
Filling of Paredes creek	Construction of diversion channel Plantation on the bank of new drainage channel	Project	Proponent	During construction	
Dust pollution	Install dust collectors (filters), water spraying during dry season	Project	Proponent & contractors	Throughout construction	Penalty
Increased waste disposal on the adjacent river & change in natural flow	Rehabilitation plan for the improvement of the river Information campaign on proper waste disposal Installation of barrier nets around the construction site to contain siltation at the river Spoils generated from earth /civil works must be used as filling materials	Project & local government	Local government & proponent	Throughout construction	Penalty

Table 9-1 (Continuation) ENVIRONMENTAL MANAGEMENT PLAN OF THE SM CITY – DASMARIÑAS (Construction)

IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURES	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
Land pollution due to disposal of wastage	Stockpiled spoil materials should be away from drainage roots and on the stable areas Provision of sanitary facilities Construction of appropriate waste disposal facilities	Project and local government	Proponent & local government	During construction	Penalty
Increased traffic	Traffic management plan should prepared and traffic rules and regulations should be strictly enforced Widen roads Alternate routes Traffic signals	Project and local government	Proponent, contractors & local government	Throughout construction	
Increased water usage	Process modifications Conservation of watershed Monitoring of deep well extraction	Project	Proponent, contractors, local gov't, & water district	Throughout construction	
Increased power usage	Observation of power saving measures Process modifications	Project	Proponent & contractors	Throughout construction	
Health hazards	Enforcement of laws (e.g. Clean Air Act) Compulsory use of safety equipments Information education campaign for public health and safety	Project and local government	Local government & Proponent	Throughout construction	Penalty

Table 9-1 (Continuation) ENVIRONMENTAL MANAGEMENT PLAN OF THE SM CITY – DASMARIÑAS (Construction)

IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURES	COST OF MITIGATION/ ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
<i>b. Socioeconomic</i>					
Increased employment for skilled and un-skilled people	Priority to the local residents Human resource development for capacity building Job placements	Project & local government	Proponent, contractors, & local government	Throughout construction	MOA between local government & proponent
Increase in population due to arrival of migrant workers, job seekers, business speculators etc.	Construction of temporary facilities	Project & local government	Proponent & local government	Throughout construction	
Sanitation problems	Construction of adequate sanitary sewerage and disposal facilities	Project & local government	Proponent & local government	Throughout construction	
Increased demand for basic commodities	Increase market (food, commodities) in the vicinity of the project	Local government	Local government	Throughout construction	
Increased aesthetics	Proper landscaping & planting of ornamental trees on the banks of river and sides of drainage as well as on open spaces of the project area	Project	Proponent & contractors	Throughout construction	

Table 9-1 ENVIRONMENTAL MANAGEMENT PLAN OF THE SM CITY – DASMARINAS (Operation)

IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURES	COST OF MITIGATION/ ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
3. Operation					
<i>a. Bio-physical</i>					
Increase in waste generation and disposal on the adjacent river	Use of biodegradable packing materials Collection, sorting and recycle of waste materials Process modification for water conservation Rules and regulations in environmental sanitation should be strictly enforced Start rehabilitation plan for the improvement of river	Project & local government	Proponent & local government	During operation	Penalty
Health hazards	Use of unleaded fuel Enforcement of laws (e.g. Clean Air Act)	Local government	Local government & proponent	Throughout operation	Penalty
Increased traffic	Traffic management plan should be prepared and traffic rules and regulations should be strictly enforced Widen roads and alternative routes	Project & local government	Proponent, contractors, & local government	During operation	
Increased in water consumption Depletion of water table	Adoption of water harvesting Sustainable water management Increased vegetation cover Recycling and reuse of water	Project & local government	Proponent & local government	During operation	
Increased power usage	Promote energy conservation system IEC campaign	Project	Proponent & local government	During operation	
Increased air & noise pollution due to increase in no. of vehicles	Regular monitoring of the pollutants on the air and strict imposition of fines and charges for pollution law violators Well maintained equipments/vehicles Enforcement of Clean Air Act	Local government	Local government, vehicle operators, & public	During operation	Penalty

Table 9-1 (Continuation) ENVIRONMENTAL MANAGEMENT PLAN OF SM CITY – DASMARIÑAS (Operation)

IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURES	COST OF MITIGATION/ ENHANCEMENT	INSTITUTIONAL RESPONSIBILITY	SCHEDULE	GUARANTEES
<i>b. Socioeconomic</i>					
Increase in land value	Strict implementation of land use plan to prevent uncontrolled development and squatting	Local government	Local government		
Generate employment	The local residents should be given high priority	Project	Proponent & local government	During operation	MOA between local government & proponent
Increased government taxes	Institutionalization of transparent tax collection schemes	Local government	Local government	During operation	
Lower income for small enterprises	Development of cooperatives	Local government & small entrepreneurs	Local government & small entrepreneurs	During operation	MOA between local government & proponent
Increased SM related business	Incentive to local businessmen	Local government	Local government		
Increased local tourism	Enhance tourism information system and improve facilities Maintain amusement, recreation and leisure centers in SM	Project & local government	Proponent & local government		MOA between local government & proponent
Change in population structure	Formation of coordination committee	Local government	Proponent & local government		

I. MATRIX OF ENVIRONMENTAL MONITORING PLAN WITH SUMMARY DISCUSSION

The identified activities during the project phases will be monitored by a multipartite monitoring team. The matrix below shows the summary of the environmental monitoring plan.

Table H Environmental monitoring and evaluation program of the SM CITY during different phases of the project

PROJECT ACTIVITIES	INDICATORS	LOCATION	MONITORING FREQUENCY	RESPONSIBILITY
Pre- construction				
	<i>Soil</i>			
Removing vegetation	Sedimentation on river	Pala pala River	Twice a year (before and after wet season)	MMT
	<i>Water</i>			
	Volume of water discharge	Pala pala River	Twice a year (before and after wet season)	MMT
	TDS, pH, color, turbidity, odor etc.	Pala pala River	Twice (before and after site preparation)	MMT
Construction				
	<i>Soil</i>			
Leveling of project site	Sedimentation on river	Pala pala River	Once (during construction)	MMT
Filling of Paredes creek	Displacement of soil	Paredes creek	Once (during construction)	Proponent
	<i>Water</i>			
	Volume of water discharge	Pala pala River	Twice a year (before and after wet season)	MMT
	TDS, pH, color, turbidity, odor etc.	Pala pala River	Once a year	MMT
	<i>Air</i>			
	Particulate & gaseous pollutants	Project site and surrounding area	Weekly	MMT
	<i>Noise</i>			
	Noise pollution	Inside & vicinity to project area	Monthly	MMT

Operation				
	<i>Soil</i>			
SM CITY Operation	Sedimentation on the river	Pala pala River	Semiannual for the first 5 years and annually for other 15 years	MMT
	Air			
	Gaseous pollutants	Inside & vicinity to project area	Monthly for first five years and quarterly for other 15 years	MMT
	Water			
	Volume of Water Discharge	Pala pala River	Before and after wet season for the first 5 years and annually for other 15 years	MMT
	Depletion of groundwater table	Project Site	Annually	MMT
	TDS, pH, color, turbidity, odor, etc.	Pala pala River	Annually	MMT
	<i>Noise</i>			
	Noise pollution	Inside & vicinity to project area	Monthly for the first 5 years and quarterly for other 15 years	MMT

J. PROPOSAL OF ENVIRONMENTAL GUARANTEE AND MONITORING FUND SCHEME

The proponent has allotted 2% of the total PhP 1,273,192,500 project cost (see chapter 2) amounting to **PhP 25,463,850** for the EGF.

The amount will be used for the following purposes:

- ♦ the immediate rehabilitation of areas affected by damages in the environment and the resulting deterioration of environmental quality as a direct consequence of project construction, operation, and abandonment;
- ♦ the just compensation of parties and communities affected by the negative impacts of the project;
- ♦ the conduct of scientific or research studies that will aid in the prevention or rehabilitation of accidents and/or environmental damages; or
- ♦ for contingency clean-up activities, damage prevention program and social equity measures including the necessary IEC (information education communication) and capability building activities.

For the EMF, 5% of the total annual operating cost will be set aside. The breakdown of the amount calculated for the next twenty years is shown in the table below.

Table I Proposed EMF Scheme

Monetary: PhP

ITEM	DESCRIPTION	COST	Subtotal
Monitoring			7,140,000
Soil: - Soil erosion and sedimentation	2,000PhP ¹ , semi-annually for the first five years and annually for the years thereafter until the 20 th year of project operation	50,000	
Air: - Gaseous pollution	55,000PhP ² , monthly for the first five years and quarterly for the years thereafter until the 20 th year of project operation	6,600,000	
Water: - Water quality and wastewater effluent quality including aquatic	10,000PhP ³ , before and after rainy season for the first five years and annually after rainy season for years thereafter until the 20 th year of project operation	250,000	
Noise: - Noise pollution	2,000PhP ⁴ , monthly for the first five years quarterly years thereafter until the 20 th year of project operation	240,000	
Honorarium	Honorarium of 10 members at Php 1,300/ meeting quarterly for the first 5 years of operation and Php 1,500 semi-annually for the years thereafter until the 20 th year of operation	710,000	710,000
Communication and Extension	7,295.40 Php annually for the first 5years and 15,000 Php for the following years until the 20 th year of project operation	261,477	261,477
TOTAL EMF			8,111,477

¹ 1sample laboratory fee 500P * 4 sample point = 2,000P

² 1sample laboratory fee 13,750P * 4 sample point = 55,000P

³ 1sample laboratory fee 2,500P * 4 sample point = 10,000P

⁴ 1sample laboratory fee 500P * 4 sample point = 2,000P

K. SUMMARY OF PROCESS DOCUMENTATION REPORT

The team kept a journal of meetings, workshops, discussions and activities related to the project. This process was helpful in the preparation of the report especially in recalling dates, names, places and events. It was also valuable in determining whether the team was faithful to the approaches and methods that it planned to use.

Portions of the journal were extracted and edited to serve as the process documentation report. (Refer to Annex 3)

L. SUMMARY OF COMMITMENTS, AGREEMENTS, AND PROOFS OF SOCIAL ACCEPTABILITY

The proponent has submitted the actual EIS of the proposed SM City Dasmariñas. It is reportedly undergoing the EIA review process.