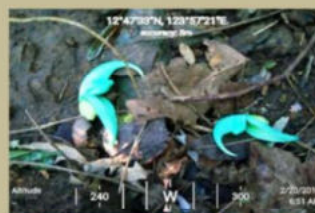
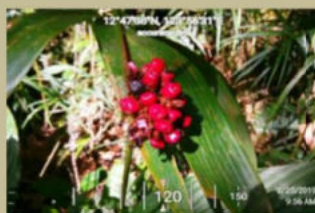
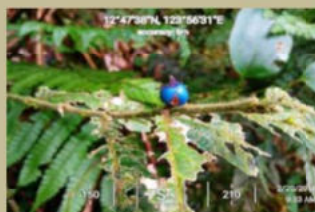
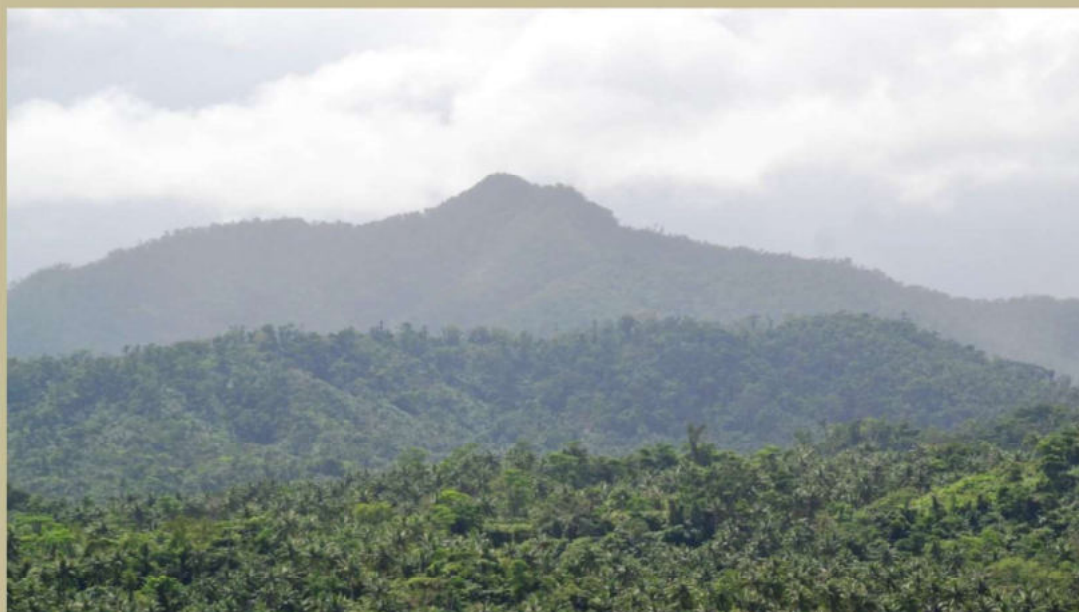


# FOREST LAND USE PLAN 2023-2027



LOCAL GOVERNMENT UNIT OF MAGALLANES *through the*  
MUNICIPAL PLANNING AND DEVELOPMENT OFFICE  
*in partnership with*  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
REGION V



## 1.0 EXECUTIVE SUMMARY

The Local Government Code of 1991 has devolved substantive position of development planning and administrative functions of the national government to the local government units. This has enabled the Local Government Unit of Magallanes (LGU Magallanes) to pursue development aspirations with their own initiatives and resources, in accordance with the overall development goals of the national government.

With the vision of a vibrant and sustainable economy, LGU Magallanes recognizes and understands the critical role that the environment and natural resources sector, particularly the forests and forest lands (FFLs), play in sustainable attainment of such vision. Since land, specifically forest and forestland, is a limited resource, careful planning has to be made in order to protect, develop and conserve these limited assets not just for the next five years but also for the future generations.

The formulation of Forest Land Use Plan (FLUP) serves as a road map for the efficient and effective allocation and management of investments in the forests and forestlands within Magallanes. It provides clear and common direction to LGU Magallanes with the assistance of the Department of Environment and Natural Resources Region V and other stakeholders in protecting and managing forests and forestlands within its political jurisdiction, provides framework in organizing and mobilizing its resources and proposes monitoring improvements.

The Municipality of Magallanes is a third-class municipality in the province of Sorsogon, Region V. It has an area of 1,230.13 hectares of forest land categorized as protected seascape (mangrove), watershed forest reserve, CBFMA (upland) and untenured (mangrove). The topography of the watershed area is above 18% in slope, interspersed by ridges and numerous creeks, springs, waterfall and rivers.

The Juban – Magallanes Watershed Forest Reserve (JMWFR) is the only area proclaimed as Watershed Reservation in the province of Sorsogon. The survey and assessment of the Protected Area was conducted by the National Mapping and Resource Information Authority (NAMRIA) in the year 1992 which was in response to a joint resolution formulated by the Sangguniang Bayan of the Municipalities of Juban and Magallanes to establish Mount Bintacan area as Watershed Reservation. It was established by virtue of Proclamation No. 108, dated November 23, 1992 by the president of the Republic of the Philippines Fidel V. Ramos. The watershed rehabilitation project contains an aggregate area of 1,032 hectares of the public domain.



However, per result of the reconnaissance survey conducted in 2017 simultaneously with the delineation and demarcation of the JMWFR boundaries using the PRS 92 and UTM Zone 51 projection coordinates transmitted by DENR V Technical Services, Legazpi City as data and reference, showed that JMWFR is situated within the administrative jurisdiction of three (3) municipalities namely: Juban, Magallanes and Bulan in the province of Sorsogon. The reference for the exact area of the JMWFR was based on the coordinates provided by the Office of Surveys and Mapping Division, Land Evaluation Survey Section (SMD-LESS) of DENR V Regional Office, Technical Services, with an aggregate area of 998.0942 hectares as shown in the area distribution below:

Bulan, Dolos	– 37.7547
Juban, Calmayon	– 71.2517
Juban, Lajong	– 49.9220
Juban, Maalo	– 407.5909
Magallanes, Bulala	– 155.8697
Magallanes, Busay	– 46.6849
Magallanes, Magsaysay	– 195.4691
Magallanes, Tula-Tula Sur	– 33.4513

The present boundary of JMWFR plays an important role in the conservation of biodiversity protected area. All activities that are geared towards the protection of wildlife resources and habitat are being undertaken within the boundary of the area.

Including also are the two (2) watersheds in the municipality – Caditaan River Watershed located in Barangay Caditaan with an area of 4,486.5977 hectares and Geladioc River Watershed located in Barangay Incarizan with an area of 3,041.5708 hectares.

The Local Government Unit gives high importance to the environment and the ecosystem because the health, well-being and safety of the people is dependent on it. With the effects of climate change and disaster risks being felt by the community, ridge to reef approach is vital in the sustainable management of the environment and the ecosystem.

## 1.1 Importance of Magallanes' Forest and Forestland

**Legitimization/Proclamation of JMWFR.** Based from the ENIPAS Act of 2018, outstanding remarkable areas and biological important public lands that are habitat are rare and endangered species of plants and animals, biogeographic zones and related ecosystems, whether terrestrial, wetland or marine, all of which shall be designated as "Protected Area". Juban-Magallanes Watershed Forest Reserve (JMWFR) is home to some of the Critically Endangered Fauna species such as the Philippine Hanging-Parakeet (*Loriculus philippensis*), Blue-Naped Parrot (*Tanygnathus lucionensis*), and Golden-Crowned Fruit Bat (*Acerodon jubatus*), hence, can be qualified for the classification as Protected Area under ENIPAS law. The basic consideration in the establishments of JMWFR as protected area includes: (a) Juban-Magallanes Watershed Forest Reserve (JMWFR) as the only watershed reserve proclaimed in the province of Sorsogon, (b) JMWFR contains globally threatened, vulnerable and restricted wildlife fauna and possible other unnamed species of wildlife, (c) It is basically a watershed sustaining springs, rivers, falls and other water catchments and irrigations, and (d) It has various flora resources that are of great economic importance such as the Gisok-Gisok (*Hopea philippinensis*), Yakal (*Shorea astylosa*), Mapilig (*Xanthostemon bracteatus*), Bagtikan (*Parashorea malaanonan*) and Mayapis (*Shorea palosapis*).

**Land Use.** The existing land use of JMWFR is predominantly timberland and classified as a Protected Area (PA). About 65% is covered with closed forest with an aggregate area of 647.0797 hectares, still thickly vegetated with dipterocarp species. Nonetheless, agricultural activities occupy the lower elevation and in the relatively flat areas. These are planted with vegetables, abaca, coconut and fruit crops, such as pili, coffee and citrus species. Root crops, like cassava and sweet potato, are also cultivated in some of these portions. Moreover, grassland ecosystems are commonly found in the area. This type of ecosystem is found in abandoned kaingin areas.

To address such issue, numerous reforestation projects were implemented in the area to rehabilitate degraded portion of the PA, as well as to provide local employment opportunities. Species planted under National Greening Program (NGP) includes Narra (*Pterocarpus indicus*), Gmelina (*Gmelina arborea*), Toog (*Petersianthus quadrialatus*), Banilad (*Sterculia philippinensis*), Mahogany (*Swietenia mahogany*), Rattan (*Calamus gibbsianus*), Acacia (*Samanea saman*), Dao (*Dracontomelon dao*) and Pili (*Canarium ovatum*).



**Vegetative Cover, Ecosystem and Habitat Type.** The land cover of JMWFR showed an area of 647.0797 hectares or a percentage of 65% closed forest which is defined as the natural forest where trees in the various story's and undergrowth cover 40% of the ground. The different vegetative cover of primary forest, land uses and vegetation vary according to elevation. The area is well vegetated with premium and dipterocarp species of trees. While in open areas, it is dominated by grass species such as Talahib (*Saccharum spontaneum*), rono, tiger grass, hagonoy and many others. Some portion of the area particularly at the lower elevation was dominated by coconut plantation. It was then estimated that more or less eighty percent (80%) of the area is covered with residual dipterocarp forest. Cultivated areas can also be found on the lower portion of the protected area site, which are planted with coconuts and other agricultural crops, mixed with brushes and grassland. Shrubs can also be found within the forest under contract Reforestation projects.

### 1.1.1 Water Production

The surrounding communities of JMWFR have constructed reservoirs in some portion of the Protected Area that supplies potable water. Several water tributaries such as springs, streams, rivers and waterfalls are found in the area which is being utilized by the community for domestic use and irrigation. Some of these are perennial and some are intermittent in nature. The local people believe that there will be no danger of pollution considering that head water emanates from the higher elevation of the mountains. However, Forest protection must also be strengthened to minimize if not entirely halt forest destruction such as timber poaching and kaingin making, which are associated with vegetative clearing, thereby increasing the landslide incidence, followed by siltation that will certainly affect the quality of water bodies within the PA.

Various springs can be found in all the Barangays covering the JMWFR which are potential for ecotourism activities and serves as a source of water by the community both for drinking and domestic use. Various river channels are also presented in the PA and there are three (3) Barangays covering JMWFR has access to the waterfall inside the PA, such as Maalo and Calmayon in Juban and Bulala in Magallanes.

### 1.1.2 Power Source

Electricity in the municipality is distributed to the 34 barangays through the Sorsogon Electric Cooperative I (SORECO I), the local electric cooperative servicing the southern part of Sorsogon province. Eighty – two percent (82%) of households in Magallanes are served by electricity.

### 1.1.3 Tourism Development/Recreational

**Natural Tourist Attraction.** Magallanes had identified five (5) natural tourism destinations which includes Bucal-Bucalan Spring, Parola Beach Resort, Tinacos Islet, Tula-Tula Sur Falls and Malihao Spring. Bucal-Bucalan Spring located in Barangay Aguada Norte which was developed through PAMANA Project gathers most of the visitors especially during months of March to May. This is also the only government managed tourism site that generates revenue which in year 2012 amounted to 487,745.00 pesos.

Parola Beach Resort situated in Barangay Behia was also developed under PAMANA Project and is still accessible to the public for free in year 2012 to 2013, but starting 2014, cottage fee of P 150.00 is being collected to the visitors. Tinacos Islet on the other hand is accessible for free with at most 50 visitors in a year; this site needs more improvement to become more attractive to the tourist.

Tula-Tula Sur Falls in Barangay Tula-Tula Sur is also a government owned site managed by the Barangay Local Government Unit. This site is accessible for free through a tricycle or jeepney ride. Malihao Spring located in Barangay Bacalon is owned and managed by a private individual which collects affordable fees for entrance and cottage.

**Religious Tourist Attraction.** Among the tourist site in the municipality classified under religious tourist attraction are the San Lorenzo Ruiz Shrine situated inside the Catholic Church Compound in Barangay Binisitahan Sur and Sta. Lourdes Grotto found in Barangay Behia. San Lorenzo Ruiz is owned and managed by the Catholic Church which is often visited by its devotees on the month of September. On the other hand, Sta. Lourdes Grotto was also developed through PAMANA Project and is visited by its devotees during the feast of Saint Lourdes on the month of February.



**Historical Tourist Attraction.** The only tourism site in Magallanes with historical roots is the Spanish Shipyard located in Barangay Behia. During the Spanish Period, this place is where the huge ships of the Spaniards were built. This is visited by up to 500 tourists often during summer breaks in the month of April to May.

**Religious-Historico-Cultural Attraction.** Gibalon Shrine located in Barangay Siuton has the only religious, historical and cultural roots. It is considered religious because it is where the First Mass in Luzon was held and its historical and cultural heritage became part of the lives of the people in Magallanes. This site is owned and managed by the government and is often visited in the month of October during Kasanggayahan Festival in the province of Sorsogon.

All tourism sites are accessible through various transport vehicles such as tricycle and jeepney for Bucal – Bucalan Spring, Tula – Tula Falls, Malihao Spring, Gibalon Shrine and San Lorenzo Shrine. Tourist attractions located in coastal areas such as Parola Beach Resort, Tinacos Islet, Sta. Lourdes Grotto and Spanish Shipyard are reachable through motorized boat. Though there's still no established regular trip going to the abovementioned sites, there are lots of vehicles that can be rented or hired in a reasonable fare.

**JMWFR's Potential for Eco-Tourism.** There are many reasons why the Juban-Magallanes Watershed Forest Reserve should be promoted as an ecotourism destination. It should not only be known locally, but throughout the world. One can find in the JMWFR great happiness, rest and recreation. One great factor that attracts tourists to visit the Protected Area is that it offers a very quiet atmosphere, no disturbance unlike the city where vehicles and buses bring unpleasant sound.

The Protected Area promotes interests and challenges for both local and foreign tourists due to its qualities as a wilderness of great natural beauty, pristine environment, crystal clear waters and various wildlife species that are so inviting. Tourism offers both benefits and threats to ecological stability in the area but visits to the area offers them the experience of the magnificent scenery and wildlife that would justify its global importance, thus, its immediate requirements for conservation.

#### 1.1.4 Food Production

The current economic structure of the municipality is basically that of agriculture and commerce and trade. Agricultural activities are focused on crop production, fishery and livestock production. However, the dominant agricultural activity and economic source of the municipality is fishery both for marine and inland fishing. Areas devoted to agricultural crop production comprises a total area of 75.892 hectares for rainfed and 230.09 hectares for irrigated with a total of 305.982 hectares. Major crops within these agricultural lands are rice, corn, coconut, banana and root crops.

There are some small-scale livestock farms operating within the municipality particularly goat and hog livestock produced in Barangays Sta. Elena and Pili occupying an area of 1.50 hectares. On the other hand, there are no farmers engaged in poultry production.

For fishery production, marine fishing and grounds are concentrated in Ticao Pass and part of Sorsogon Bay along coastal barangays of Anibong to Biton with an estimated area of 79.500 square kilometers.

#### 1.1.5 Disaster Risk Reduction/Climate Change Adaptation

Disasters caused by natural hazards have caused too much destruction to human lives, crops; livelihoods, and economic losses, thus, disaster risk reduction (DRR) has become a critical part in resolving such. Hence, the role of healthy ecosystems in providing cheap, reliable protection against natural hazards has been increasingly recognized and as a result, protected areas are being modelled as potential tools for their role in facilitating DRR.

Based on the data provided in the Protected Area Suitability Assessment (PASA), JMWFR is prone to four (4) major natural calamities which include (a) Soil Erosion, (b) Typhoon, (c) Flooding and (d) Earthquake. The slope and terrain of JMWFR shows that fifty percent (50%) of the Protected Area is highly susceptible to landslide, and forty five percent (45%) is moderately susceptible to landslide, while five percent (5%) of the area is not susceptible to landslide. The occurrence of soil erosion and landslides particularly near water tributaries primarily leads to siltation to the area. Moreover, heavy rainfall



during rainy season commonly cause flooding in low lying areas due to the forest degradation in some portion of the PA.

Conversely, Climate Change is also one of the natural hazards being faced by the country and the communities surrounding the PA are not exempted from such. As declared in the Republic Act No. 9729 or the "Climate Change Act of 2009", the state recognizes the vulnerability of the Philippine archipelago and its local communities, particularly the poor, women and children to potential dangerous consequences of climate change such as rising seas, changing landscapes, floods, storms, climate-related illnesses, damage to ecosystems and biodiversity loss that affect the country's environment, culture and economy. It was also highlighted that the state shall strengthen, integrate, consolidate and institutionalize all government initiatives to address climate change in the context of sustainable development.

The continuing increase of the local population living adjacent in the JMWFR, as the primary resource users of the Protected Area, puts pressure in the uplands to satisfy the increasing demands for settlements, food production, and agricultural development for livelihood activities. Hence, the demand for forest resources had also substantially increased. Based from the verification on PASA, the community revealed that various man-made threats are being observed within the PA such as (a) illegal cutting of trees, (b) collection of non-timber forest products, and (c) illegal hunting/ poaching of wildlife. Presently, there has been no record of massive forest clearings in any part of JMWFR. However, there are few reports of illegal environmental activities in some barangays of the PA. Major concerns also include several factors or circumstances that hamper the effective management of the watershed forest reserve, such as political issues in law enforcement and resource use, lack of coordination among stakeholders, and inadequate financial and technical support for integrated upland development.

#### **1.1.6 Livelihood**

Agriculture serves as the main source of income for communities surrounding JMWFR, which includes farming activities in lowland rice, abaca and coconut production, copra making, harvesting of high value root crops and gathering of minor forest products (honey). In addition to this, some are engaged into weaving, handicraft-making, construction work, transportation service (hired habal-habal and tricycle). Although

majority are employed, there are still members of the community who are underemployed and unemployed, these members wanted to have additional work or additional working hours to meet the needs of the household.

### 1.1.7 Biodiversity Conservation

The biological resources of the Philippines, and its biodiversity, offers one of the few avenues left for national recovery. The conservation and judicious utilization of our natural resources can help transform a rundown environment and a fledgling economy into a stable and productive state. The largest single challenge to environmental and resource management in the Philippines is the maintenance of biodiversity upon which society depends on very intricate ways. Uncontrolled threats come from the encroachment of people on all habitats of the country's valuable and vulnerable natural systems. People have no choice because of economic necessity. On the other hand, they do not understand and appreciate the value of biodiversity which they are destroying. They do not realize the benefits they received from its existence. Forest, coral reefs and wetland habitats are being destroyed at an alarming state annually of which most people are not aware.

## 1.2 The FLUP as a Tool to Align Land Uses and Ensure Effective On-Site Management of the LGUs Forest and Forestland

Forest Land Use Planning ensures sustainable forest and management and recognizes forests and forest lands (FFL) as natural resource assets which if properly managed could significantly contribute to the development and welfare of the constituents as well as contribute to ensuring food security, biodiversity conservation and climate change mitigation.

Through Executive Order No. 318 series of 2004, Promoting Sustainable Forest Management in the Philippines, the declaration of the Policy states that:

*"It shall be the Policy of the Government to pursue the sustainable management of forests and forestlands in watersheds. Watersheds shall be deemed as ecosystem management units and shall be managed in a holistic, scientific, rights-based, technology-based and community-based manner and observing the principles of multiple-use, decentralization and devolution, and active participation of local government units (LGUs), synergism of economic, ecological, social and cultural objectives, and the rational utilization of all resources found therein. It shall*



*likewise be the policy of the Government to promote sound, effective and efficient, globally-competitive and equitable forestry practices in both public and private domains.”*

Its guiding principles includes (1) Delineation, Classification and Demarcation of State Forestlands, (2) Holistic, Sustainable and Integrated Development of Forest Resources, (3) Community-Based Forest Conservation and Development, (4) Incentives for Enhancing Private Investments, Economic Contribution and Global Competitiveness of Forest-Based Industries, (5) Proper Valuation and Pricing of Forestry Resources and Financing Sustainable Forest Management (SFM), and (6) Institutional Support for SFM.

Moreover, Local Government Code (RA 7160) mandates LGUs to carry out devolved forest management functions as well as enter into co-management agreement with DENR to develop, manage, protect and sustainably use a specified area of forest/forestlands.

Forest Land Use Planning in Magallanes primarily aims to properly manage its forest and forestland. It is a plan for allocating forest, forestlands development, protection, conservation and capacitating in-site and off-site stakeholders. As this plan is also integrated in the Comprehensive Land Use Plan of the LGU, this will serve as guide to align environmental and ecosystem programs towards more effective and sustainable forest and forestland management.

Administratively, FLUP together with the 10-Year Solid Waste Management Plan (SWMP) intends to create Municipal Environment and Natural Resources Office (MENRO) and equip it with the necessary staff and personnel. This office will be tasked to implement programs relevant to protection and conservation of forest and forestland.

### **1.3 The FLUP in support to the Provincial/Regional Development Plans**

Comprehensive land use and forest land use plans are important tools in the holistic and sustainable forest resources management. FLUPs of LGUs are integrated in the CLUPs to ensure optimum and balanced use of natural resources to support local, regional and national growth and development.

The provincial development plan and the regional development plan as the frameworks for the future development of the province and the region, respectively, were developed to direct its physical development in relation to its future needs.

As component of the province, the municipality has to align and synchronize its plans for its land uses, particularly the forest land use. LGUs are mandated by law to share with other levels of government the responsibility in the management and maintenance of ecological balance within its territorial jurisdiction.

The regional framework directs forest and forest land management towards conservation of all the forests within the region. This plan, however, not only focuses on conservation but also on rehabilitation and proper management.



## 2.0 SCOPE AND LIMITATIONS OF THE FLUP

The FLUP of Magallanes was prepared through a participatory approach and responds to the following major issues:

(1) Which forestlands within the municipality are open access or not allocated for specific uses? Where are these areas located? What is the size of these unallocated forestlands? What are its conditions and status?

(2) Which forestlands in the municipality are allocated but not under effective management? Which forestlands have been allocated but have no defined or assigned entity to be responsible? How are these forestlands being managed?

(3) Are there conflict areas or emerging conflict areas with respect to the allocation and management of FFL? What can be done to resolve these conflicts? What management systems are feasible in these areas?

(4) What are the existing support services in the FFL? Where are the required public and private investments that are needed to be enhanced for sustainable forest management and increase the productivity of agricultural lands?

(5) Which watersheds or sub-watersheds should have immediate and urgent attention for rehabilitation and management due to perceived threats on the sustainability of forest resources?

### 2.1 Physical Boundaries

The municipality of Magallanes lies on the southern part of Sorsogon Province or approximately located between 124° to 125° longitude and 12° to 13° latitude. Its physical configuration consists of one (1) big mass and two (2) islands namely, Bagatao Island and Tinacos Island. As per the records of the Municipal Assessor based on tax maps, it has a total land area of 109.45 square kilometers divided into thirty-four (34) barangays.

The municipality has approximately 9,698.63 hectares or 88.74 % of alienable and disposable lands and about 1,230.13 hectares or 11.26 % of forest and forest lands based from the records of the Department of Environment and Natural Resources Land Management Bureau (MGB-LNB).

## 2.2 Duration

The Forest Land Use Plan (FLUP) is a 5-year Plan which requires mid-term and annual review to properly assess its implementation and ensure updated implementation of programs, projects and activities towards achievement of its goals.

## 2.3 Relation with the CLUP

This FLUP was crafted consistent and complementary to the CLUP and the Juban Magallanes Watershed Forest Reserve (JMWFR) Management Plan.

## 2.4 Data Sources and Limitations

Data used in this plan such as the physical features of the municipality including land area, barangay administrative boundaries, slope, elevation and topography among others are gathered from the Land Management Bureau (LMB), Mines and Geosciences Bureau (MGB) and National Mapping and Resource Information Authority (NAMRIA). Data source for demographic and socio-economic profiling are from the results of the Rapid Community-Based Monitoring System (RCBMS) conducted in 2014 and the Philippine Statistics Authority Census of Population and Housing in 2015. Data on forest and forestland use including information on watershed are lifted from the Protected Area Suitability Assessment (PASA) Report for Juban – Magallanes Watershed Forest Reserve. Threats, issues and concerns on forest and forestland are gathered from the stakeholders during the workshop.

Thematic maps used on this plan are generated using the Quantum Geographic Information System (QGIS) and hazard maps are obtained from MGB.

Other sources of data are the different offices in the LGU such as the Municipal Agriculture Office, Municipal Assessor's Office and bulk of which are obtained from the data base maintained in the Office of the Municipal Planning and Development.



## 3.0 METHODOLOGY

### 3.1 Preliminary Activities

The CLUP of Magallanes was approved on December 2021 and although forest and forest land management were incorporated in the plan, the LGU was not able to conduct a thorough study on this matter, thus the LGU through the Municipal Planning and Development Office (MPDO) coordinated with the DENR Regional Office V for technical assistance in the formulation of FLUP.

On April 4, 2022, a letter of intent was sent by Municipal Mayor Hon. Augusto Manuel M. Ragragio to Regional Executive Director Francisco E. Milla Jr., CESO III requesting for technical assistance. On February 2022, a coordination meeting between the LGU and Regional Technical team headed by Forester III Jovito Magay and Cartographer II Manuel A. Divina was held at the Mayor's Conference Room.

### 3.2 FLUP Preparation

**Table 1**  
**FLUP Schedule of Activities**  
**Municipality of Magallanes**  
**2022**

FLUP Activities	Date of Implementation
Letter of Intent was sent to DENR R5	April 4, 2022
Coordination meeting between LGU and DENR R5 team	February 2022
Ground Validation of Infrastructure Review and Validation of FLUP Maps	April to June 2022
FLUP Orientation	April 6, 2022
MOA Signing	April 11, 2022
Workshop (Situational Analysis)	September 28-30, 2022
Drafting of FLUP (Writesop)	October 25-26, 2022
Presentation to SB	
Presentation of Draft FLUP to DENR Review Panel	
SB Endorsement of FLUP for Approval of DENR	

### 3.2.1 Covenant in the Preparation of Forest Land Use Plan

A Memorandum of Agreement was signed by Hon. Augusto Manuel M. Ragragio and Regional Executive Director Francisco E. Milla Jr. on April 11, 2022. This was given authority by Sangguniang Bayan through Resolution No. 111-2022.

### 3.2.2 Creation of Municipal FLUP Technical Committee

Through Executive Order No. 5 s. 2022, the FLUP Municipal Technical Working Group was created. The composition of the team is as follows:

COORDINATOR:	Ma. Evans R. Maraña, C.E.	– MPDC
ASSISTANT COORDINATOR:	Eden L. Ariate	– MENRO-OIC
MEMBERS:	Nilda L. Conda	– DRRM Officer
	Merwin B. Grutas	– Mun. Agriculturist
	Irene O. Orteza	– Mun. Assessor
	Ferdinand A. Abraham	– Tourism Officer
	Cyril H. Bejison	– SB Secretary
	Hon. Roy C. Carrascal	– SB Comm. On Environment
	Charita R. Bon	– Liga President
	Lilian V. Delos Santos	– CSO Rep.
	34 Punong Barangays	

### 3.2.3 FLUP Orientation and Training

The FLUP Orientation was conducted on April 6, 2022 at the ABC Hall, LGU Compound, Magallanes, Sorsogon. It was participated by Punong Barangays, department heads, representatives from non-government organizations (NGOs) and other stakeholders.

### 3.2.4 Community Profiling and Mapping

Prior to the planning process, community profiling and mapping was conducted. The Municipal Planning and Development Office prepared the recent community profile and generated maps from all available plans such as the Comprehensive Land Use Plan, Comprehensive Development Plan, 10-Year Solid Waste Management Plan, Devolution Transition Plan, among others, while other information was collected from the participants during the orientation. The preparation of thematic maps was undertaken



through a joint effort of the MPDO GIS Staff who prepared the existing shapefiles of the LGU and DENR personnel who conducted ground validation on April to June 2022.

Primary data on problems, issues and needs, stakeholders both inside and outside the watersheds and their interests, biodiversity, other resources and assets and their status, existing and proposed programs, projects, activities, and status of existing tenure and occupancies were all gathered during the stakeholder's analysis on September 28 – 30, 2022.

### **3.2.5 Updating of Thematic Maps/Composite Maps**

Inputs to the updating of thematic/composite maps were the geospatial data obtained from both secondary and primary sources. The GIS Staff of MPDO, LGU Magallanes prepared the shapefiles of the available maps and the GIS expert of DENR did the processing of raw maps to generate thematic maps. An overlay analysis of thematic maps was also conducted.

### **3.2.6 Zoning and Allocating Forest and Forest Land**

On September 28 – 30, 2022, the Training Workshop on Preliminary Prioritization of Sub-watersheds and Forest Allocation was conducted. Policies related to allocation and setting of criteria for allocating forests and forest lands were first discussed. Prioritization of sub-watersheds was also conducted.

The TWG and community participants then formulated the quantitative and qualitative criteria for allocating and prioritizing sub-watersheds based on their preferences. Then a consensus was arrived at for the prioritization of sub-watersheds and allocation of forests and forestland.

### **3.2.7 Review and Formulation of the Vision, Mission, Goals, Objectives and Strategies**

On October 25 – 26, 2022, a write shop was conducted wherein it was agreed upon by the TWG to adopt the vision and mission of the LGU to be the vision and mission of the FLUP as its vision emphasized the importance of "living in an adaptive and resilient

environment” and its mission gives high significance on environmental protection and conservation”.

The objectives and strategies were anchored on the issues, problems and opportunities in the LGUs forest and forestlands as identified by the stakeholders and thorough situational analysis conducted by the TWG.

### **3.2.8 Drafting the FLUP**

The FLUP was prepared during the write shop on October 25 – 26, 2022 participated by the DENR Region V TWG, the LGU Magallanes TWG, and selected Punong Barangays.

### **3.2.9 Legitimization of FLUP**

On November 10, 2022 the FLUP TWG gathered to review the completeness of the FLUP and refine its contents. After which, it was revised to include all comments and suggestions. The 2nd draft of the FLUP will be finalized and the final draft will presented to the Sangguniang Bayan. Through SB resolution endorsing the FLUP, the document will be submitted for approval by DENR V.

### **3.2.10 Preparation and Signing of MOA**

Upon approval of the FLUP by the DENR Region V, the Municipal Mayor and DENR V Regional Director will sign a FLUP Joint-Implementation MOA. This will legalize implementation of the 5-year Forest Land Use Plan of Magallanes.



## 4.0 VISION, MISSION, GOALS AND OBJECTIVES

### 4.1 Vision

*“A leading agri-fishery and historico-tourism municipality in the province of Sorsogon, with vibrant and sustainable economy, responsible and caring community, living in an adaptive and resilient environment, led by pro-active and transparent leaders.”*

### 4.2 Mission

*“The municipality of Magallanes shall promote the improvement of the quality of life of all Magallenos through the implementation of development programs designed to increase and expand the delivery of basic services with emphasis on infrastructures, tourism, agriculture and fisheries, livelihood, universal health care, education benefits and opportunities, environmental protection and conservation, and disaster preparedness. It shall pursue these programs through a policy of multi-sectoral participation and inclusivity thereby enjoying the gains of economic and social development.”*

### 4.3 Goals and Objectives

#### 4.3.1 Goals

- To implement appropriate forest and forest land use mechanism that will improve food production and water supply, create sustainable economic activities, protect public and private interests, safeguard communities and settlements and increase forest assets while maintaining the integrity of forest and forestlands.
- To strengthen partnership among relevant institutions and other stakeholders for proper allocation and management of forest and forestland.

#### 4.3.2 Objectives

- To conserve, preserve and rehabilitate the upland (ridge) and coastal (reef) ecosystem.
- To maintain the integrity of watersheds and water production areas.

- To improve and increase production of timber and fruit trees, wildlife resources and agricultural crops.
- To establish buffer strips along rivers and between production and protected forests.
- To organize/reorganize people's organization in the forest and forestland.
- To establish a mechanism for dialogue and participation in the forest and forest land management approaches.
- To enact policies that will aid in the conservation, preservation and protection of forest and forestlands.



## 5.0 KEY FINDINGS

### 5.1 LGU Profile

#### 5.1.1 Biophysical Profile

The municipality of Magallanes lies on the southern part of Sorsogon Province or approximately located between 124° to 125° longitude and 12° to 13° latitude. Its physical configuration consists of one (1) big mass and two (2) islands namely, Bagatao Island and Tinacos Island. As per the records of the Municipal Assessor based on tax maps, it has a total land area of 10,944.9921 hectares divided into thirty-four (34) barangays.

The Juban-Magallanes Watershed Forest Reserve occupies the southernmost part of Bicol Peninsula, about 600 kilometers from Manila. The JMWFR lies between 12 degrees and 15 minutes Latitude and 123 degrees and 55 minutes longitude. It is bounded on the North and East by the Municipality of Juban on the South by the Municipalities of Juban, Bulan and Magallanes; and on the West by the Municipality of Magallanes. Said Protected Area covers the Barangays of Lajong, Calmayon and Maalo in the Municipality of Juban; Barangays Bulala, Busay, Tula-tula Sur and Magsaysay in Magallanes; and Dolos in Bulan. The area is accessible by land transportation like bus, passenger jeepneys, motorcycles and other vehicles. However, one of the most possible way of going to and from watershed and adjacent area is thru hiking.

Table 2  
Land Area by Barangay

Barangay	Land Area (Hectare)	Percent to Total
<b>URBAN:</b>		
Aguada Norte	293.0612	2.68
Aguada Sur	220.1544	2.01
Banacud	22.8819	0.21
Bacolod	2.7247	0.02
Binisitahan Norte	14.6014	0.13
Binisitahan Sur	6.3674	0.06
Cawit Extension	14.6607	0.13
Cawit Proper	8.1174	0.07
Pantalan	4.8072	0.04
Poblacion (Central)	5.0990	0.05
<b>SUB TOTAL</b>	<b>592.4753</b>	<b>5.41</b>
<b>RURAL:</b>		
Anibong	403.7991	3.69

Bacalon	595.0009	5.44
Biga	233.8146	2.14
Behia	244.1921	2.23
Biton	465.8671	4.26
Bulala	399.1132	3.65
Busay	385.1908	3.52
Caditaan	604.1688	5.52
Cagbolo	293.1066	2.68
Cagtalaba	348.8371	3.19
Ginangra	148.0979	1.35
Hubo	520.0318	4.75
Incarizan	391.5373	3.58
Lapinig	481.7956	4.40
Magsaysay	460.3658	4.21
Malbog	545.0670	4.98
Pawik	371.0495	3.39
Pili	509.9101	4.66
Salvacion	761.4465	6.96
Santa Elena	369.2814	3.37
Siuton	788.0384	7.20
Tagas	217.7270	1.99
Tula-Tula Norte	353.5194	3.23
Tula-Tula Sur	461.5588	4.22
<b>SUB TOTAL</b>	<b>10,352.5168</b>	<b>94.59</b>
<b>TOTAL</b>	<b>10,944.9921</b>	<b>100.00</b>

Source: Municipal Assessor's Office

**Coastal Ecosystem.** Coastal resource management is being implemented in the municipality in adherence to RA 8550 (Fisheries Code of the Philippines). Twenty-one (21) barangays in the municipality are coastal, and majority of the inhabitants are fishermen. At present, the town is recovering from the degradation or low fish production due to overfishing and illegal fishing practices in the past through implementation of coastal resource management programs and strict implementation of fishery laws.

The Municipal Ordinance No. 248-2000 known as "Municipal Fisheries Management and Conservation Ordinance of Magallanes, Sorsogon" and "Unified Fisheries Ordinance of the Municipalities bordering Sorsogon Bay" dated January 10, 2000 serves as the guidelines in management, conservation, development, protection, utilization and disposition of all fish and fisher/aquatic resources within the municipal waters of Magallanes, Sorsogon.

The declared policies of the Municipality in reference on the said ordinance are as follows:

- Achieve food security as the primary motivation in the utilization, management, development, conservation and protection of its fishery resources to meet the food needs of its population;



- Ensure that economic development is in consonance with ecological balance and environmental protection;
- Promote the regeneration, conservation and sustainable management of its aquatic resources;
- Work for the improvement of productivity in aquaculture but within ecological limits;
- Focus on the alleviation of poverty among the municipal fisherfolks through appropriate technology, livelihood programs including marketing research and extension and other services;
- Establish equitable access and use of fishery resources based on, but not limited to Maximum Sustainable Yield (MSY), or Total Allowable Catch (TAC) on the basis of resources and ecological conditions; and
- Strive for social equity, by not looking at the bay resources as an investment opportunity for drawing large returns but as a life-sustaining environment for the municipal fisherfolks.

The **municipal waters** as stated in the ordinance include not only streams, lakes, inland bodies of water and tidal waters within the municipality which are not included within the protected areas defined under Republic Act No. 7586 (The NIPAS Law), public forest, timber lands, forest reserves or fisher reserves, but also marine waters included between two (2) lines drawn perpendicular to the general coastline from points where the boundary lines of the municipality touch the sea at low tide and a third line parallel with the general coastline including offshore islands and 15 kilometers from such coastline. Where two (2) municipalities are so situated on opposite shores that are less than 30 kilometers of marine waters between them, the third line shall be equally distant from opposite shore of the respective municipalities.

Section 6 of the ordinance stated the use of municipal waters wherein the use and exploitation of its fishery and aquatic resources shall be served exclusively for Filipino citizens. Provided, that all fishery related activities in the territorial waters of this municipality shall be utilized by registered municipal fisherfolks and cooperative organizations. However, the Municipal Mayor, upon recommendation of the MFARMC, may issue permit to local or foreign tourist/s who desire to engage in fishing for leisure subject to the provisions of this Ordinance and whatever Fisheries Administrative Order (FAO) that may be issued regarding sports fishing.

The established fishery zones are described as follows:

- Zone 1 – Areas from the point of Magallanes Bulan boundary to the point of Aguada Sur – Aguada Norte
- Zone 2 – Areas from the point of Aguada Sur – Aguada Norte boundary to the point of Pantalan
- Zone 3 – Areas surrounding Bagatao Island
- Zone 4 – Areas from Magallanes Pier to Balite point at Magallanes – Cagbolo boundary
- Zone 5 – Areas from Balite point to Anibong
- Zone 6 – Areas within the Incarizan River
- Zone 7 – Within the mouth of Caditaan River areas
- Zone 8 – Within the mouth of San Isidro River areas
- Zone 9 – Within the mouth of Ginangra River areas
- Zone 10 – Areas between the mouth of Ginangra and Caditaan River

**Ticao-Burias Pass Protected Seascape (TBPPS).** Pursuant to RA 11038 known as “Expanded National Integrated Protected Area System (ENIPAS) Act of 2018, Ticao-Burias Pass Protected Seascape (TBPPS) as one of the marine biodiversity corridors of the country and as the largest fishing ground in Bicol region was declared as a protected area under the administration of President Rodrigo Roa Duterte on June 22, 2018. The area serves as habitat to ecologically rich and biologically important species within its coverage of 414, 244 hectares in the provinces of Sorsogon, Albay, Camarines Sur and Masbate.

As defined by National Integrated Protected Area Systems (NIPAS) Act or RA 7586, Protected Seascape are areas of national significance which are characterized by the harmonious interaction of human and nature where protection of natural features is being conducted while providing opportunities to the public for sustainable resource use.

Ticao-Burias Pass is located between the Ticao-Burias Island of Masbate Province and the southern terminus of Bicol Peninsula covering the Provinces of Sorsogon, Albay and Camarines Sur. It connects the Ragay Gulf in the north and Samar Sea in the south, bounded by Sibuyan Sea in the west. It is one of the major fishing grounds in the Philippines which is estimated to have an average area of 414,244 hectares. The Pass is also considered as one of the places of interest for scientific researches because of its rich biodiversity, sheltering some of the best and rarest wildlife species in the world such as whale sharks, manta rays, dolphins and marine turtles.



Ticao-Burias Pass Protected Seascape is estimated to have an average area of 414,244 hectares. It is composed of 18 municipalities: six municipalities from Sorsogon – Matnog, Bulan, Magallanes, Donsol, Pilar and Castilla; three municipalities and one city from Albay – Pioduran, Oas, Libon and Ligao City; two municipalities from Camarines Sur – Bato and Balatan; four municipalities of Ticao Island – Batuan, San Fernando, San Jacinto and Monreal; and the two municipalities of Burias Island – Claveria and San Pascual; it covers 178 barangays.

For the municipality of Magallanes, the 16 barangays covered namely, Aguada Norte, Aguada Sur, Bacoled, Banacud, Biga, Binisitahan Norte, Binisitahan Sur, Biton, Caditaan, Cawit Extension, Cawit Proper, Ginangara, Hubo, Pantalan, Poblacion, and Salvacion.

**Fish/Marine Sanctuary.** A fish/marine sanctuary in the reserve portion of the municipal waters of Magallanes situated in Sitio Taliunod to Barogbadugan, Barangay Biga was established by virtue of Sangguniang Bayan Resolution No. 70-2002 dated November 11, 2002.

The Municipal Fish Sanctuary covers an area of 57.6 hectares with the following coordinates:

POINTS	DISTANCE	LATITUDE	LONGITUDE
1 to 2	400 m	12°50'30"N	123°47'48"E
2 to 4	1,440 m	12°50'42"N	123°47'48"E
3 to 4	400 m	12°50'36"N	123°48'30"E
4 to 1	1,440 m	12°50'19"N	123°48'30"E

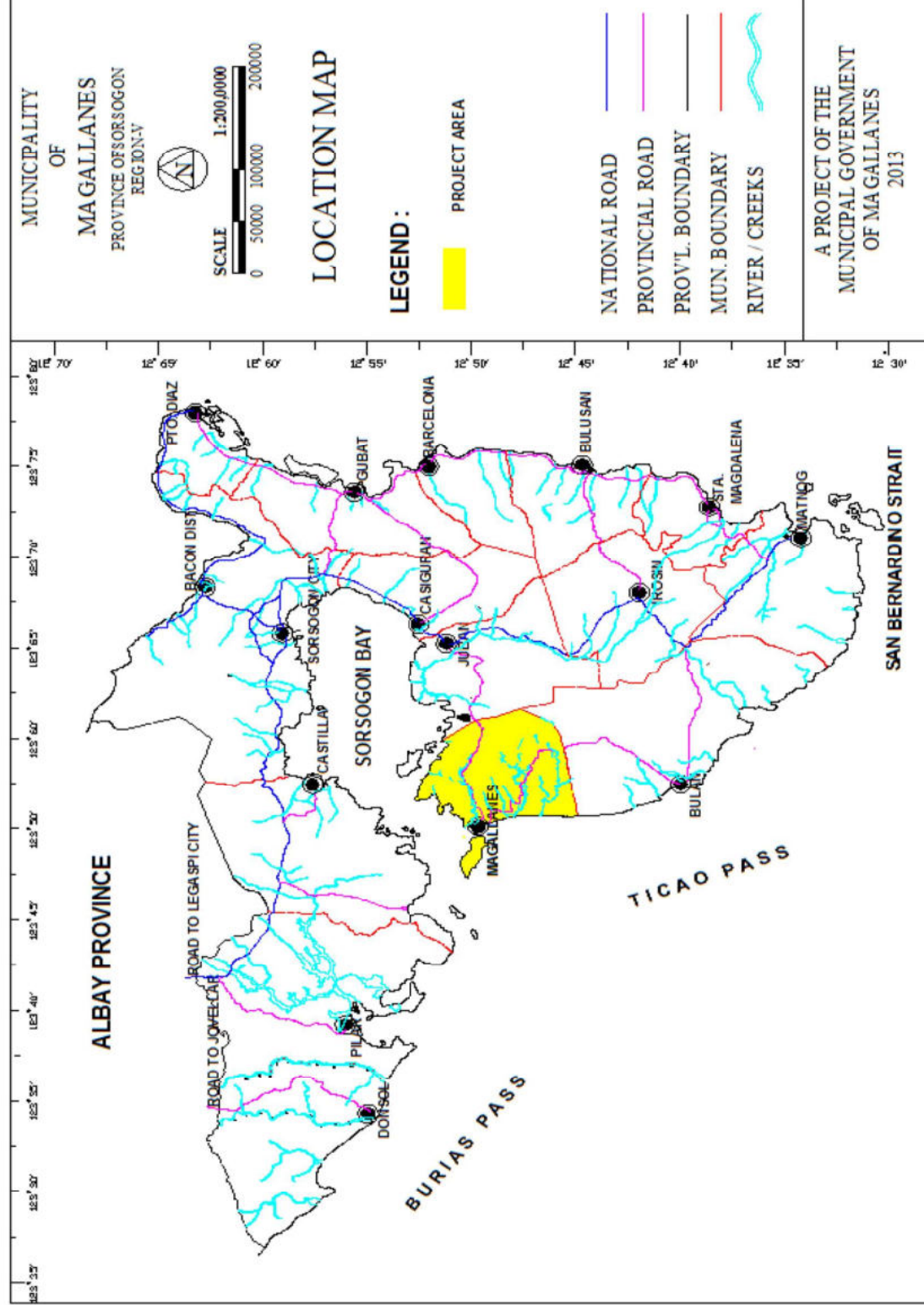
The following are the descriptions of herein mentioned areas:

1. **Buffer Area** – two perpendicular lines from the shorelines extending 400 meters seaward and third line parallel to the coastline 1,440 meters connecting two points of the aforesated perpendicular lines with an area of 21.0 hectares encompassing the marine reserved and core areas.
2. **Reserve Area** – two perpendicular lines from the shoreline extending 300 meters seaward and a third line parallel to the coastline 1,220 meters connecting two points of the aforesated perpendicular lines with an area of 16.6 hectares encompassing the core areas.

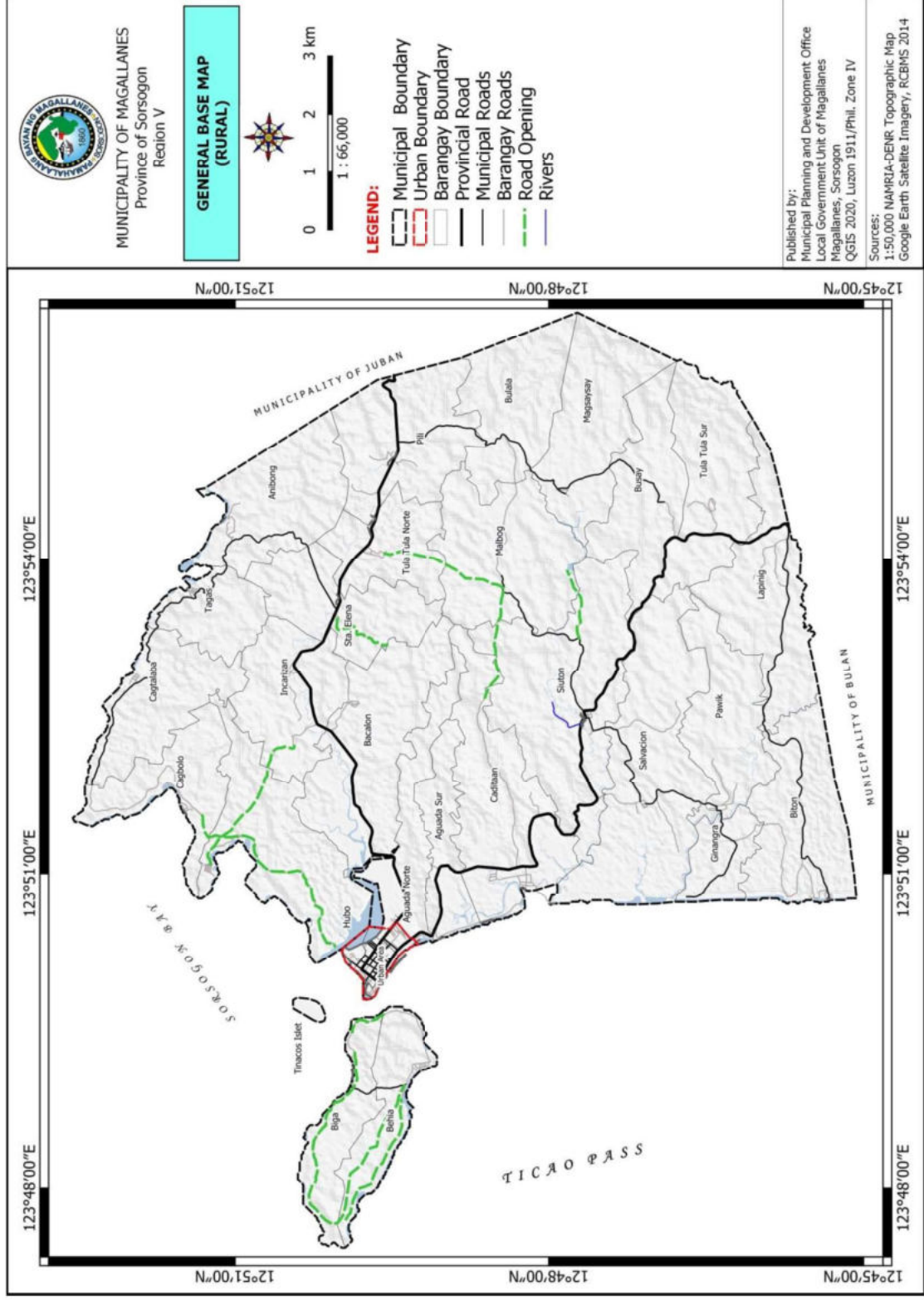
3. **Core Area** – the heart of the sanctuaries. Two perpendicular lines from the coastline extending 200 meters seaward and third line 1,000 meters parallel to the coastline connecting the two points of the aforestated perpendicular lines with an area of 20 hectares.



**Map 1. Location Map of Magallanes**

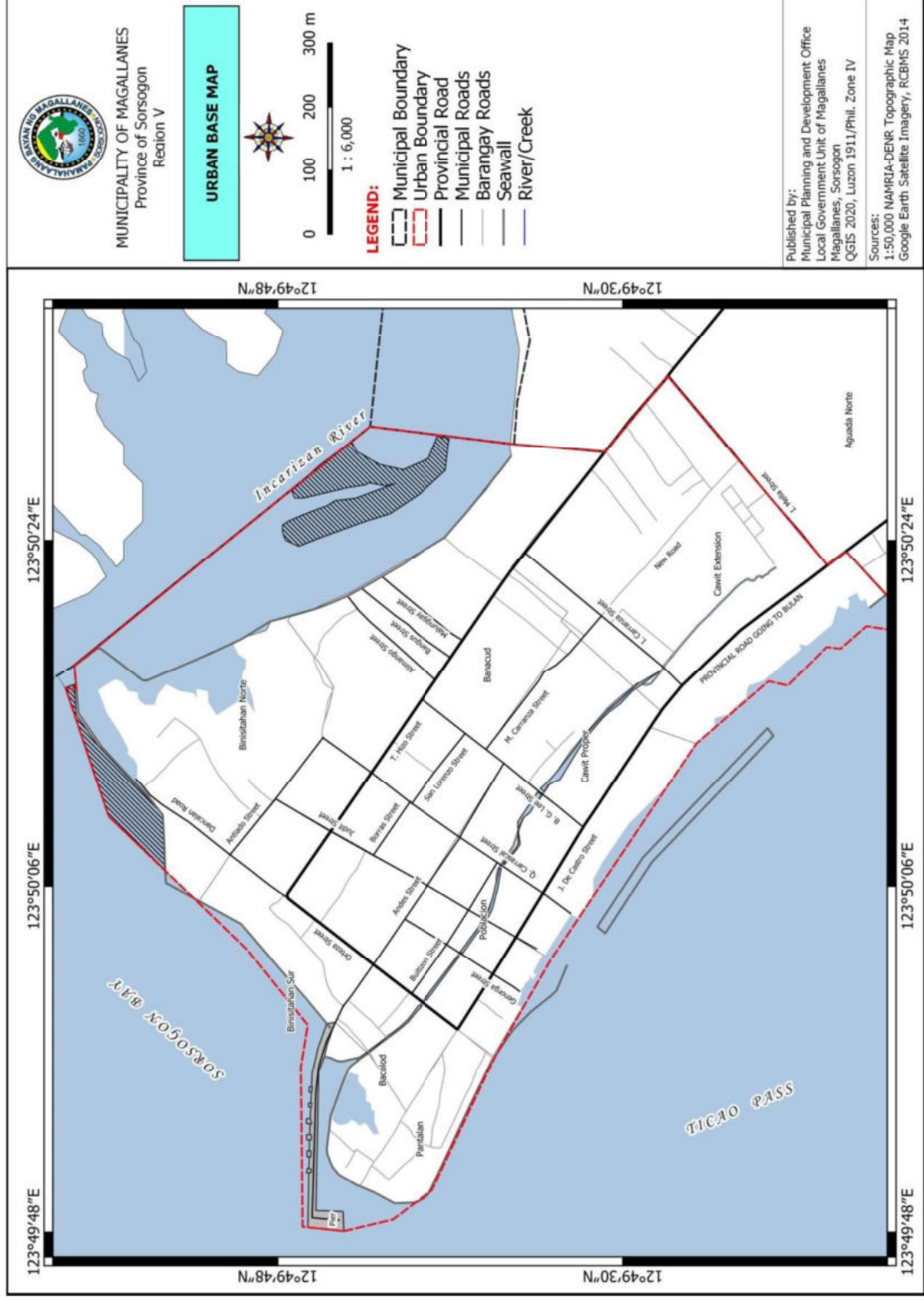


Map 2. General Base Map





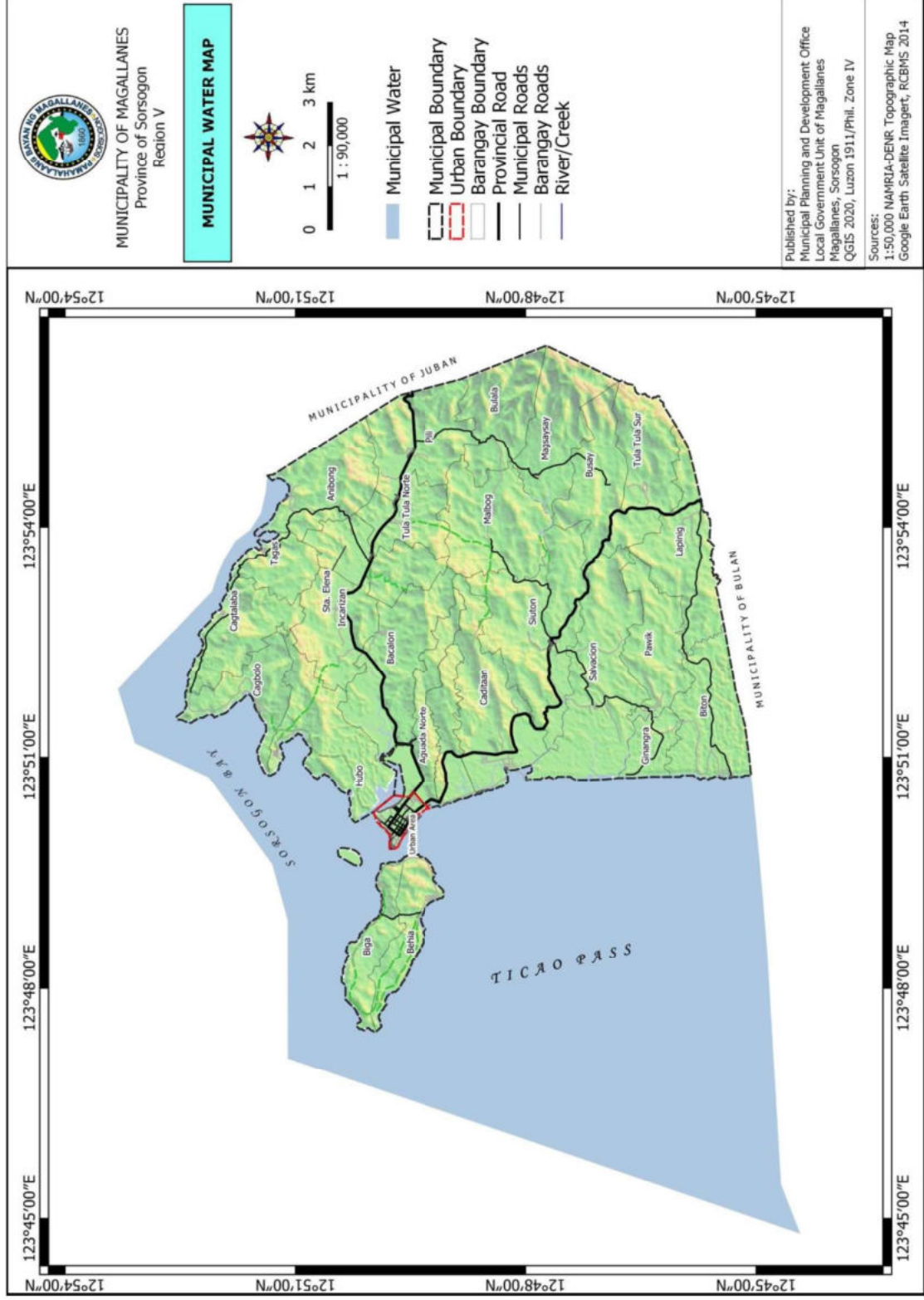
Map 3. Urban Base Map



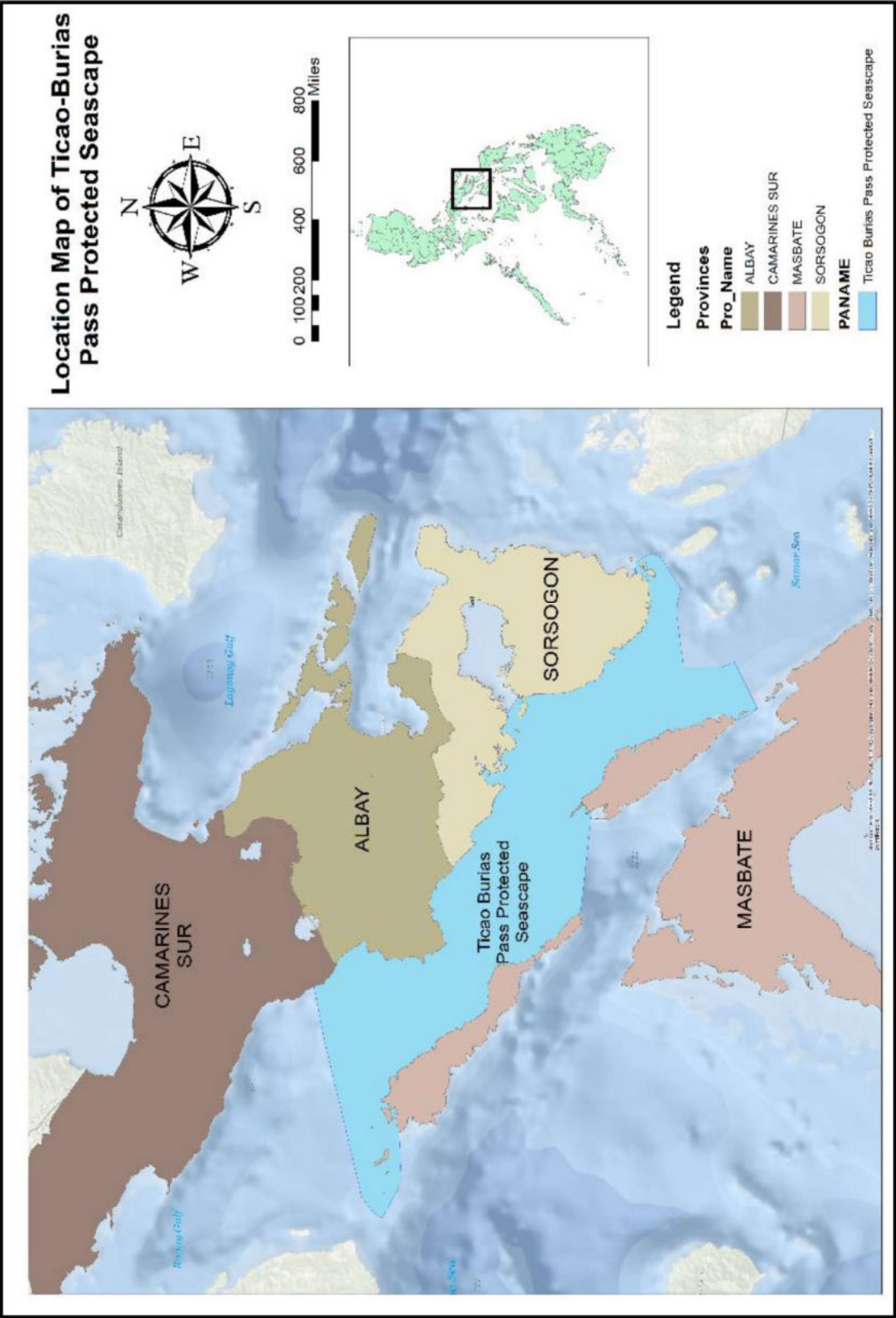
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Map 5. Municipal Waters



Map 6. Location Map of Ticao-Burias Pass Protected Seascope





### 5.1.2 Slope, Elevation, Soil Type and Land Cover

**Topography.** The topographic landscape of Magallanes is dominated by rolling to moderate terrains (18-30% slopes) and level to nearly level terrains (0-3% slopes). These terrains are interspersed with mixtures of gentle slopes up to steep slopes.

**Soil Fertility.** The soils found in the municipality are classified into the following: (1) Macabari Sandy Loam; (2) Casiguran Clay Loam; and (3) Obay Clay Loam. Macabari sandy loam are found in level to nearly level areas and are for good tillage, fertilizer application and irrigation production. Casiguran clay loam are common in gentle slope to undulating areas and are suitable for terraced crops, cover cropping, good tillage, root crops, coconuts, abaca and other unirrigated crops. Obay clay loam are prominent in undulating to steep areas and best for coconuts, abaca, upland rice, corn, root crops, fruit trees and other crops. These soil types make agriculture, the primary industry of the people in Magallanes.

The soil of JMWFR is soils of the flat upland, undulating, rolling and hilly areas, since the watershed area is generally mountainous and was determined to contain soil, classified as Casiguran clay loam. This soil type comprises the hilly areas of the towns of Juban and Magallanes, of which the Protected Area is located. The surface drainage is good to excessive, but the downward flow of water is slow. The soil in the lower portion of the area is reddish to dark brown in color, while dark brown to black sandy loam type of soil on the upper portion of the protected area. The soil particles are fine to coarse in texture and has a soil depth of about 1-3 feet. Humus or decomposed plant materials are also present in the forested area of the PA, this indicates that these portions are fertile.

**Geologic Characteristics.** The geologic characteristics of the underlying rock formations for most part of the municipality is characterized by the following: (1) Terrace Gravel and Alluvial Deposits; (2) Andesite Flow Intercalated with Agglomerate and (3) Andesite flows with Interbedded Conglomerate. The most dominant geologic rock formation is Andesite Flow Intercalated with Agglomerate. Terrace Gravel and Alluvial Deposits are common in areas along plains and coast lines.

The geologic feature of Juban-Magallanes Watershed Forest Reserve is metamorphic. The presence of unique rock formations which is very evident in the area. It should be noted that caves can also be found thereat. One of these is situated at Mount Sarimao with an

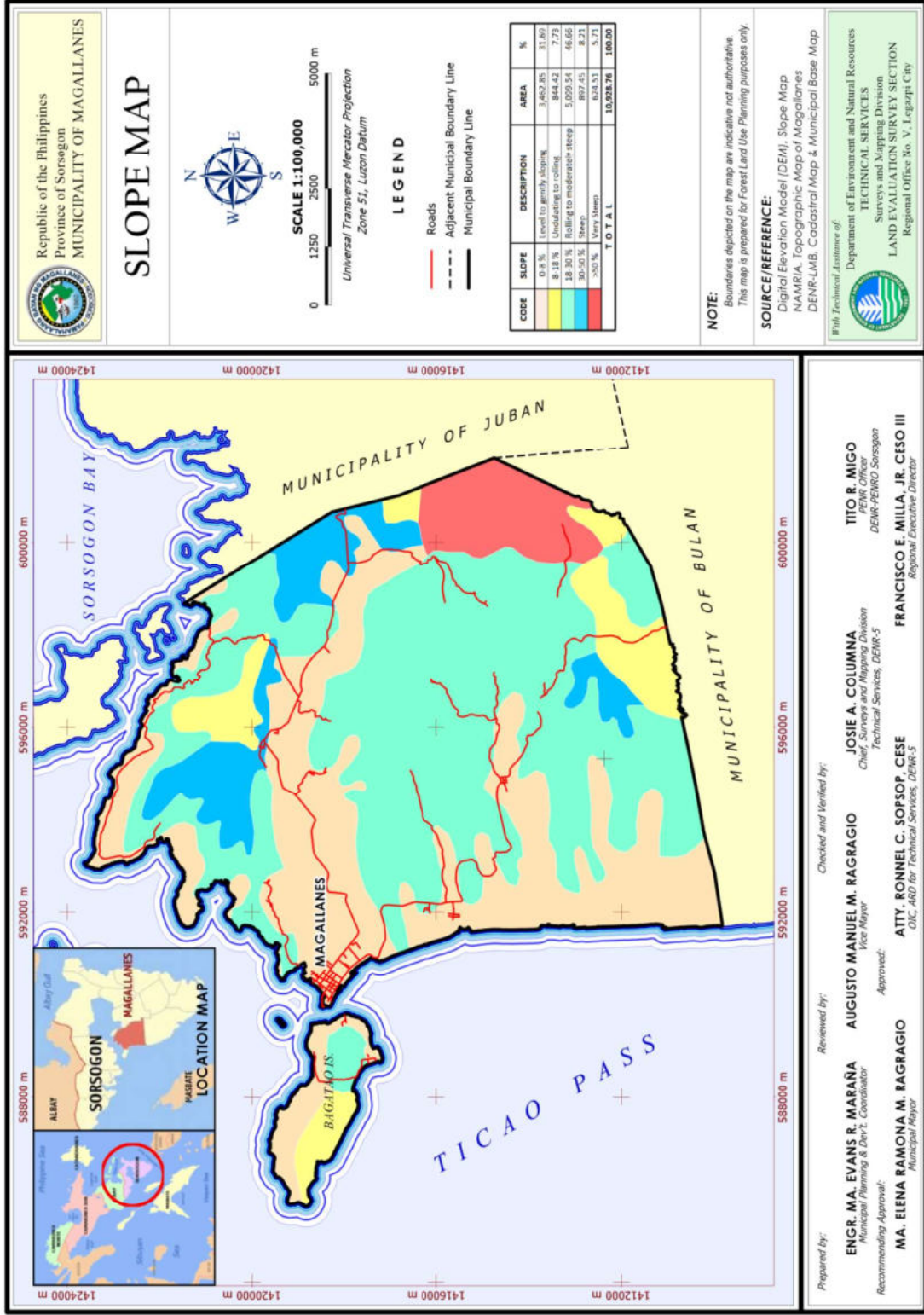
approximate length of 10 meters from its opening and with a height of 5 feet respectively. Landslides also occur in the area which is basically caused by heavy rains. Other respondents said that a plateau can be found within the Protected Area that could be utilized as camping site for mountaineers.

**Minerals.** The common mineral found in Magallanes is a non-metallic mineral known as Perlite. This can be found in the eastern part of the municipality. This mineral is commonly used as lightweight aggregates in concrete mix for abrasion and similar uses and also used advantageously to improve the poor structure of clay soils on which vegetables are grown.

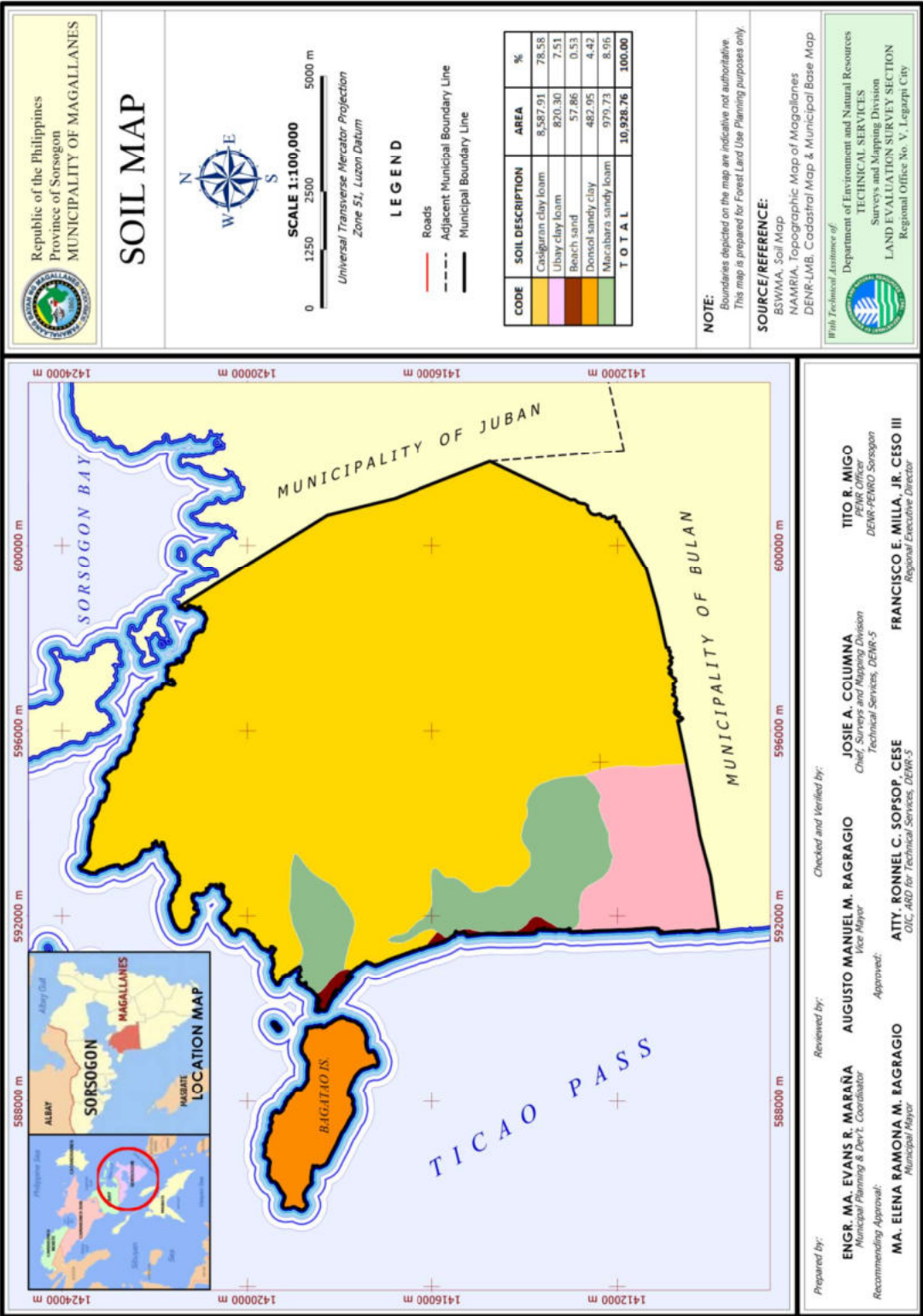
**Land Cover.** The land cover of Magallanes is composed of 53.85 has. inland water (0.49%), 89.43 has. mangrove forest (0.82%), 326.67 has. fishpond (2.99%), 303.66 has. built-up area (2.78%), 344.53 has. annual crop (3.15%), 8,845.42 has. perennial crop (80.94%), 0.40 has. open/barren land, 259.19 has. grassland (2.37%), 49.28 has. brush/shrubs (0.45%), 309.35 has. open forest (2.83%) and 346.99 has. closed forest (3.17%).



Map 7. Slope Map

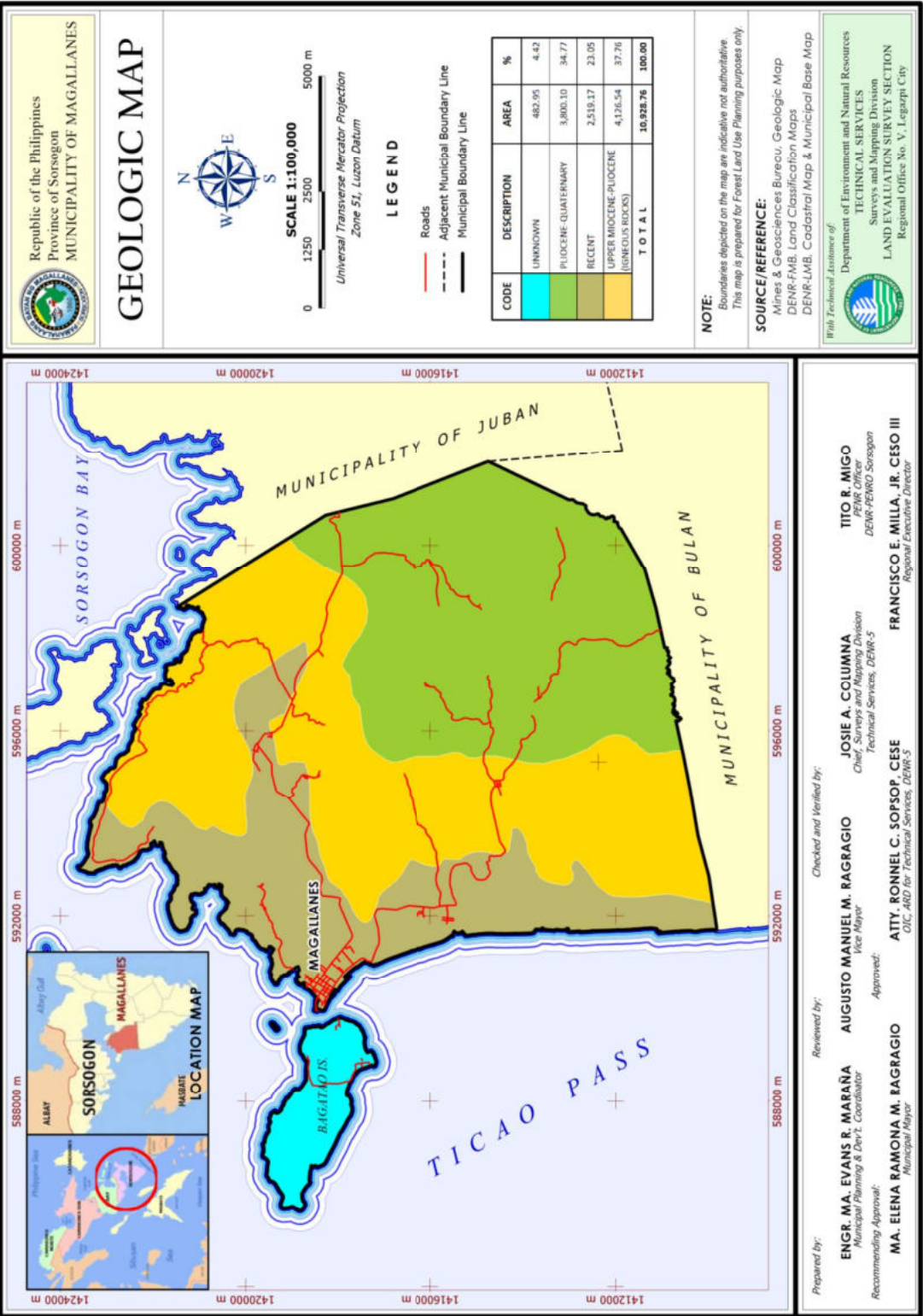


Map 8. Soil Map





Map 9. Geological Map



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**Recommended Approval:**  
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Municipal Mayor

**Reviewed by:**  
**AUGUSTO MANUEL M. RAGRAGIO**  
Vice Mayor

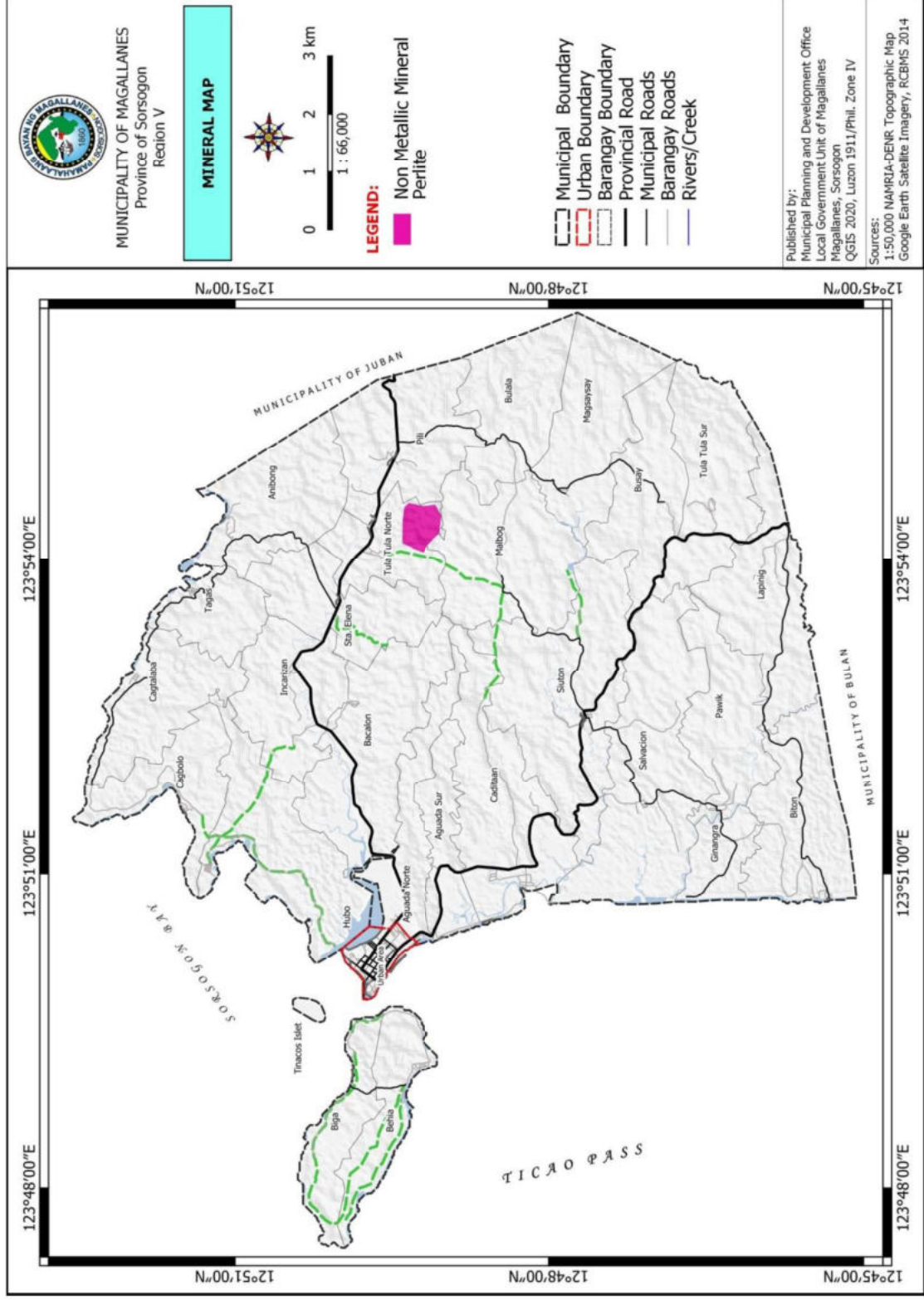
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**JOSIE A. COLUMNA**  
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Technical Services, DENR-S

**Approved:**  
**ATTY. RONNEL C. SOPSOP, CESE**  
OIC, AND for Technical Services, DENR-S

**TITO R. MIGO**  
DENR Officer  
DENR-PENRO Sorsogon

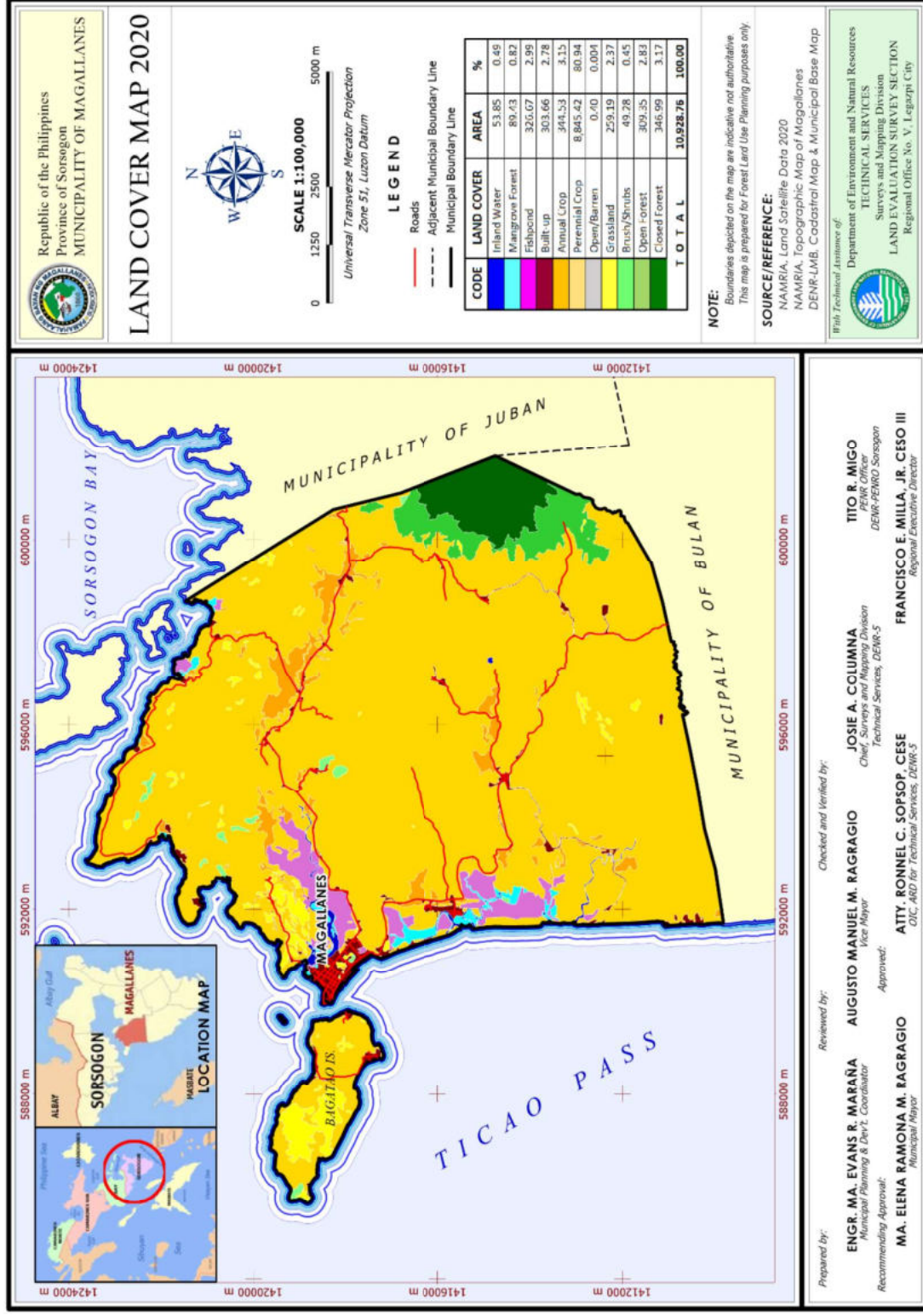
**FRANCISCO E. MILLA, JR. CISO III**  
Regional Executive Director

Map 10. Mineral Map





Map 11. Land Cover

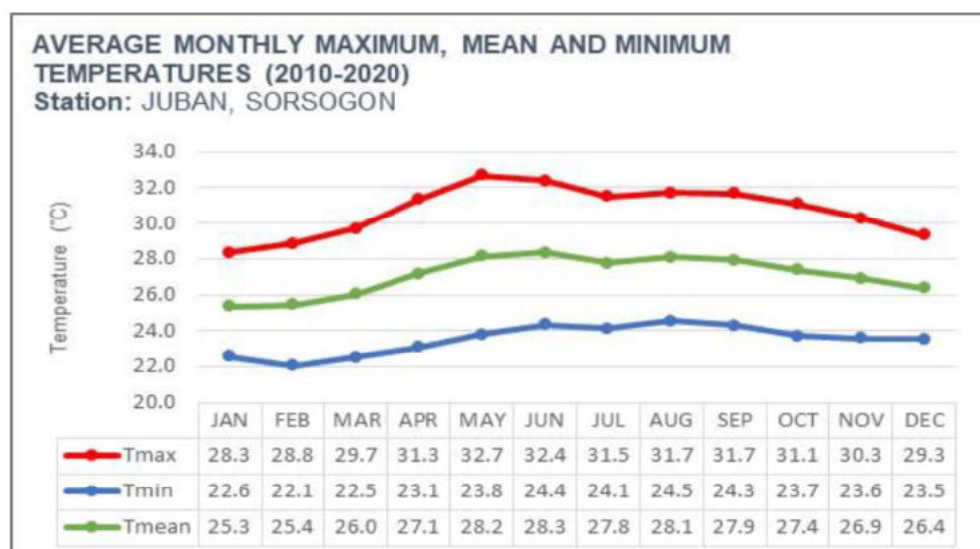


### 5.1.3 Climate

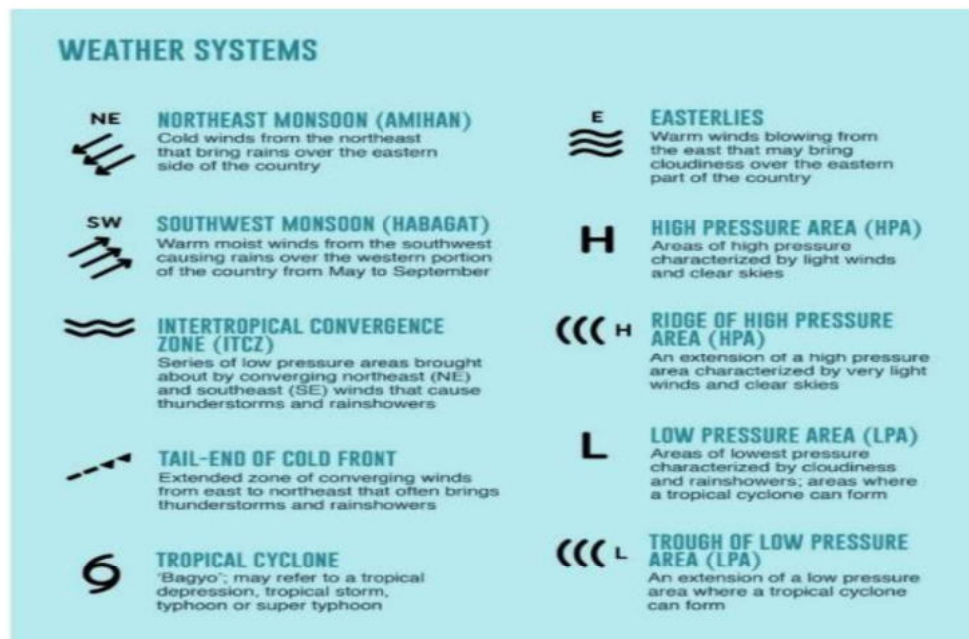
Most parts of Magallanes are classified as having Type IV Climate based from the updated climate map of the Philippines (1951-2010) wherein rainfall is more or less evenly distributed throughout the year. This type resembles Type II since it has no dry season.



**Temperature.** The average monthly temperature in the locality ranges from 25.3 °C to 28.3°C. The months of April to October has temperature that ranges from 27.1°C to 28.3°C while the months of November to March has temperature that ranges from 25.3° to 26.9°C. Other weather systems that may affect the temperature of the locality is the northeast monsoon, southwest monsoon, intertropical convergence zone, tail-end of cold front, tropical cyclones, easterlies, high pressure are, ridge of high-pressure area, low pressure area and through of low-pressure area.







Based on recent studies (UN-GoP-MDG-F 1656; Tibig et al 2009) in the country, the observed anomalies in climate in the Philippines from 1951-2006 are as follows;

- Increase of 0.6104 Degrees Celsius in observed annual mean temperature;
- Increase of 0.3742 Degrees Celsius in observed annual high temperature;
- Increase of 0.8940 Degrees Celsius in observed annual minimum temperature;
- Increased number of hot days and warm nights;
- Decreased number of cold days and cool nights;
- Increase of annual mean rainfall and rainy days;
- Increase in inter-annual variability of onset rainfall;
- Average of 20 cyclones cross the Philippine Area of Responsibility where 8-9 make landfall each year-an increase of 4.2 in frequency for the period of 1990-2003

According to the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the climate change projections in the Philippines are as follows:

- The mean seasonal temperature is expected to rise by 0.9 Degrees Celsius to 1.4 Degrees Celsius by 2020 and 1.7 degrees Celsius to 2.4 Degrees Celsius by 2050;
- Projection of seasonal temporal rainfall variation is largest (-35% to +45%) during the sixth month period from March to August.

**Prevailing Winds.** The wind systems that affect the area and which is responsible for bringing in rainfall are as follows:

- a) Northeast Monsoon (Amihan) – also known as “Northerns”. This wind system persists from as early as October up to the middle of March and its mean temperature is 25°C.

- b) The Southwest Monsoon (Habagat) – this wind system may start early in May and may last up to the middle of September. During the time of its occurrence, the municipality which is open to this wind system being on the windward will receive a good portion of the rains associated with this system particularly when the monsoon is intensified. The average temperature during the “Habagat” is 26°C.
- c) Trade winds (North & South Pacific Trades) are generally dominant during April and early May and when either monsoon is weak. It is responsible for causing rain showers and thunderstorms and has an average temperature of 27°C. Typhoons cause the 47% of the rainfall affecting the municipality. Sea and land breezes render a moderating effect on the climate and geomorphology of the coastline. These types of climate and weather network develop and constantly develop the geomorphology of the coastal area resulting to beaches and sea cliffs and other landforms observed along the coast.
- d) Tropical Cyclones are responsible for about 47% of the yearly rainfall. Although no month is really typhoon or cyclone free, the possibility of a cyclone passage over the sea is less during the first half of the year and greater during the second half. Most cyclones form in the Pacific and those that from the near Marianas Island group, east of Mindanao are more likely to affect Bulan when their tracks take them to the West Northwest. Bulan is partly open to these cyclones due to the San Bernardino Straits.

Other wind systems likely to influence the climate of the place include the Inter-tropical Convergence Zone (ITCZ), cold fronts, local thunderstorms activity, sea and land breezes, easterly waves and other local disturbances. Sea and Land breezes exerts a moderating effect on the climate of the locality particularly so because the municipality is situated along the coast and the contrast in temperature during daytime and night time results in a change in wind direction during day and night but only over limited areas.

The Easterly waves are disturbances in the tropical wind systems. When intense, this could bring in copious rainfall and might trigger the formation of tropical cyclones.

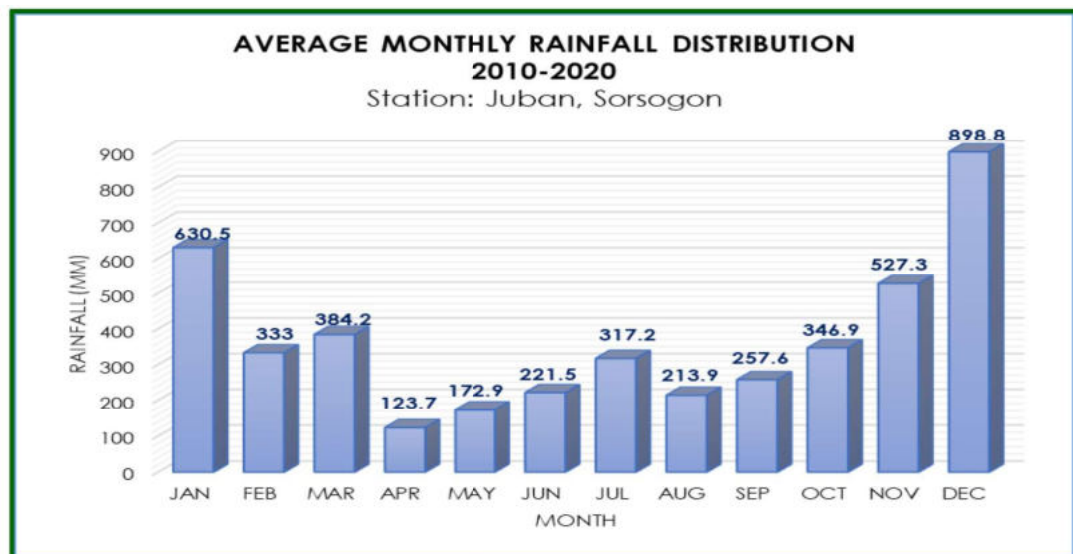
**Rainfall.** From year 2010 to 2020 the highest monthly rainfall mean is 898.8mm in the month of December and the lowest monthly rainfall mean is 123.7mm in the month of April. Generally, there is an increasing trend in average monthly rainfall from the month of April that will peak in the month of December and will gradually decrease starting January.



**Table 3. Monthly Rainfall (mm)**  
 STATION: JUBAN, SORSOGON SYNOPTIC STATION  
 Latitude: 12°50'21.9"  
 Longitude: 123°59'49.1"

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010								249.2	253.8	488.0	541.3	1168.6
2011	959.3	257.7	978.6	221.9	742.4	398.7	532.6	320.0	202.1	450.6	719.4	877.2
2012	827.7	679.1	849.2	221.2	119.3	209.4	346.9	126.2	209.3	420.8	378.6	620.4
2013	630.8	460.6	396.8	51.6	78.0	341.6	331.4	323.8	358.6	381.3	618.6	563.0
2014	366.0	182.4	418.4	189.8	32.8	312.4	545.7	154.0	274.4	363.5	373.4	1155.4
2015	457.8	152.3	179.6	116.4	26.5	79.3	153.3	137.0	215.7	179.1	543.7	668.8
2016	320.9	394.0	130.6	31.8	73.5	161.2	151.9	171.8	268.1	472.2	717.4	626.4
2017	813.0	175.3	188.6	99.6	85.0	147.4	287.8	157.2	298.6	283.0	528.4	1316.8
2018	1158.6	663.4	462.8	135.6	81.8	145.6	191.2	144.6	404.0	114.6	616.2	1163.0
2019	320.6	80.8	44.2	78.4	113.2	198.2	313.8	355.4	91.8	316.3	236.0	738.6
2020	450.2	284.4	193.6	90.8	376.0							
MEAN	630.5	333.0	384.2	123.7	172.9	221.5	317.2	213.9	257.6	346.9	527.3	898.8

**Figure 1. Average Monthly Rainfall Distribution (2010-2020)**



## 5.2 Sub-Watersheds and Drainage

A significant portion of Magallanes is within the Juban-Magallanes Watershed Forest Reserve (JMWFR). JMWFR covers an area of 998.0942 hectares situated within the administrative jurisdiction of three (3) municipalities: Juban, Magallanes and Bulan. It was established by virtue of Presidential Proclamation No. 108 dated November 23, 1992 of the then President of the Republic, Fidel V. Ramos, entitled *“Establishing as Magallanes and Juban Watershed Forest Reserve for purposes of protecting, maintaining, or improving the water yield and providing restraining mechanism for inappropriate forest exploitation and disruptive land use, a certain parcel of land of the public domain located in the Municipalities of Magallanes and Juban, Province of Sorsogon, Philippines.”*

There are nine (9) sub-watershed in Magallanes namely: (1) Bagatao Island Sub-Watershed which covers Barangay Behia and Biga; (2) CCH Sub-Watershed which covers Barangays Cagbolo, Cagtalaba and Hubo; (3) CAT Sub-Watershed which covers Barangays Anibong, Cagbolo, Cagtalaba, Hubo, Sta. Elena and Tagas; (4) Sinarurong River Sub-Watershed which covers Barangays Anibong, Bulala, and Pili; (5) Incarizan River Sub-Watershed which covers the Barangays of Aguada Norte, Aguada Sur, Anibong, Bacalon, Bacolod, Banacud, Binisitahan Norte, Binisitahan Sur, Bulala, Cagtalaba, Cawit Extension, Cawit Proper, Hubo, Incarizan, Malbog, Pantalan, Pili, Poblacion, Sta. Elena, Tagas and Tula-Tula Norte; (6) Cadagua Sub-Watershed which covers Barangays Aguada Norte, Aguada Sur, Bacalon, Caditaan and Sta. Elena; (7) SMB Sub-Watershed which covers Barangays Aguada Norte, Bacalon, Bulala, Busay, Caditaan, Magsaysay, Malbog, Pili, Salvacion, Sta. Elena, Siuton, Tula-Tula Norte and Tula-Tula Sur; (8) Ginangra River Sub-Watershed which covers Barangays Biton, Bulala, Busay, Ginangra, Lapinig, Magsaysay, Pawik, Salvacion, Siuton and Tula-Tula Sur; and (9) Cadandanan River Sub-Watershed which covers Bulala, Busay, Lapinig, Magsaysay and Tula-Tula Sur.

Magallanes has adequate natural drainage system. Its major rivers and creeks tributaries meander towards Ticao Pass and Sorsogon Bay. Most noted among its natural tributaries are Incarizan River, Siuton River, Gibalon River, Giladi River and Caditaan River.



**Table 4. Point of Issues/Conflict in Sub-Watersheds**

SUB-WATERSHED NAME	POINT OF INTEREST	POINT OF ISSUES/CONFLICT	COVERED BARANGAYS PER SUB-WATERSHED
Bagatao Island Sub-Watershed	Spring, Parola Beach Resort, Tourist Spots, Marine Protected Area, Bayawak, Astillero de Bagatao, Grotto Sta. Lourdes, Fish Sanctuary	Destruction of Corals	Behia, Biga
CCH Sub-Watershed	Waterfalls, Source of Water	Flood Prone Areas, Landslide Prone Areas, Boundary Conflict	Cagtalaba, Cagbolo, Hubo
CAT Sub-Watershed	Beach Resort, Source of water, Falls, monkey, big trees	Landslide Prone Area	Sta. Elena, Tagas, Anibong, Cagtalaba, Cagbolo, Hubo
Sinarurong River Sub-Watershed	Fishponds, Mangrove		Anibong, Pili, Bulala
Incarizan River Sub-Watershed	Spring, Bayawak, Guto, Tilapia, Bolinao, Malijao Resort, Singalong, Amid, Sawa, Cave (Tula-tula Norte)	Flood Prone Areas, Landslide Prone Areas, Boundary Conflict, Closure of Existing Creeks, Plastic Waste thrown in creeks, Illegal Cutting of Trees, Backyard Piggery, Piggery along the River	Pantalan, Central, Bacolod, Binisitahan Sur, Cawit Proper, Banacud, Binisitahan Norte, Cawit Extension, Aguada Norte, Aguada Sur, Bacalon, Incarizan, Malbog, Sta. Elena, Tagas, Tula-Tula Norte, Anibong, Malbog, Sta. Elena, Tagas, Tula-Tula Norte, Anibong, Pili, Bulala, Cagtalaba, Hubo
CADAGUA Sub-Watershed	Wild chicken, Kikiyaw, Kulasisis, Tagkarit, PonayAgila, Tagmaya, Palago, Pusiw, Maya, Bayawak, ukay, Uwak, Koro-koro, Kalaw, Baboy Ramo	Disposal of Human Wastes in the Bodies of Water, Illegal Cutting of Trees, Boundary Conflict, Flood Prone Areas, Landslide Prone Areas	Aguada Norte, Aguada Sur, Bacalon, Sta. Elena, Caditaan
SMB Sub-Watershed	Gibalon Shrine, water source	Flood Prone Area, Presence of Piggery	Aguada Norte, Bacalon, Salvacion, Siuton, Malbog, Sta. Elena, Busay, Magsaysay, Tula-Tula Norte, Pili, Bulala, Caditaan, Tula-Tula Sur

Ginangra River Sub-Watershed	Bayawak, Baboy damo, wild chicken, Lapinig water falls & cave	Illegal Compressor, Illegal Fishing, Flood & Landslide Prone Areas, Lack of Potable Water, Illegal Cutting of Trees, Boundary Conflict	Salvacion, Siuton, Ginangra, Pawik, Busay, Magsaysay, Bulala, Biton, Lapinig, Tula-Tula Sur
Cadandanan River Sub-Watershed			Busay, Magsaysay, Bulala, Lapinig, Tula-Tula Sur

The FLUP-TWG together with the key participants from the communities identified and prioritized the municipality's sub-watersheds. The prioritization was based on a set of criteria which both FLUP-TWG and participants discussed and approved.

Among the criteria, biodiversity value was given the highest weight of 25% followed by hydrological values (22%) since the significance of any watershed greatly relies on these two criteria. Economic values and protection of lives and properties were given 17% weight, aesthetic values or ecotourism was given 12% weight and 8% weight for protection of infrastructure investments.

Among the sub-watersheds, Incarizan River was given the highest priority due to the following reasons:

- **Biodiversity Value**: Has 98.66 hectares natural forest within protection zone.
- **Water Production Value**: Source of potable water for 12 barangays; source of water for irrigation
- **Economic Production Value**: Has 2,525.63 hectares total alienable and disposable (A&D) lands, 226.28 total production areas within forestland, 2,081.54 hectares plantation in A&D lands and production zones, 97.69 hectares cultivated areas within forestland.
- **Nature-Based Tourism Value**: Presence of tree tunnel has potential for trekking and mountain climbing.
- **Protection to Lives and Properties**: Has 350.95 hectares frequently flooded areas, 272.76 hectares landslide prone areas and 505 estimated households affected by flooding and landslide.
- **Protection to Infrastructure**: Has three (3) bridges which may be damaged by flooding or landslide and 78 other infrastructure which may be damaged.



Table 5. Prioritization and Ranking of Sub-Watershed

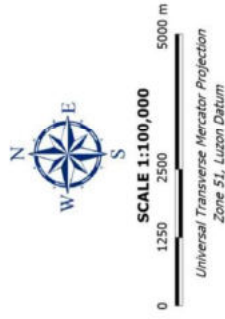
CRITERION	WTS.	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9
	%	Bagatao Island SW	CCH SW	CAT SW	Sinarurong River SW	Incarizan River SW	CADAGUA SW	SMB SW	Ginangra River SW	Cadandanan River SW
1. Bio-diversity Value	25	1	3	4	5	7	6	9	2	8
		2.8	8.3	11.1	13.9	19.4	16.7	25.0	0.89	4.44
2. Hydrological Value	22	3	4	5	2	8	6	7	9	1
		7.22	9.63	12.04	4.81	19.26	14.44	16.85	5.00	0.22
3. Economic Value	17	3	4	5	2	8	6	7	9	1
		5.56	7.41	9.26	3.70	14.81	11.11	12.96	5.00	0.22
4. Protection of Infrastructure Investments	8	3	4	7	2	9	5	8	6	1
		2.78	3.70	6.48	1.85	8.33	4.63	7.41	4.67	0.22
5. Protection of Lives and Properties	17	5	4	3	2	9	6	8	7	1
		9.26	7.41	5.56	3.70	16.67	11.11	14.81	2.33	0.22
6. Aesthetic Values/Ecotourism	12	9	3	4	2	8	5	7	6	1
		11.67	3.89	5.19	2.59	10.37	6.48	9.07	2.67	0.22
T O T A L	100	39	40	50	31	89	64	86	21	25
RANK		5th	6th	4th	7th	1st	3rd	2nd	9th	8th





The map displays the study area, which includes the municipalities of Juban and Buluan, Sorsogon Bay, and the location of Magallanes. The area is divided into nine sub-watersheds (SW-1 to SW-9). The map also shows the location of the study area within the Philippines, with an inset map showing the location of Sorsogon and Magallanes.

Republic of the Philippines  
Province of Sorsogon  
MUNICIPALITY OF MAGALLANES



LEGEND			
<span style="color: red;">—</span>	Roads		
<span style="color: red;">---</span>	Adjacent Municipal Boundary Line		
<span style="color: black;">---</span>	Municipal Boundary Line		

**NOTE:**  
Boundaries depicted on the map are indicative not authoritative.  
This map is prepared for Forest Land Use Planning purposes only.

**SOURCE/REFERENCE:**  
Digital Elevation Model (DEM) & Topographic Maps  
NAMRIA, Topographic Map of Magallanes  
DENR-LMB, Cadastral Map & Municipal Base Map

*With Technical Assistance of:*

Department of Environment and Natural Resources  
TECHNICAL SERVICES  
Surveys and Mapping Division  
LAND EVALUATION SURVEY SECTION  
Regional Office No. V, Legazpi City

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Municipal Mayor

**TITO R. MIGO**  
City Engineer  
DZNR-PEDRON Sanganay

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Regional Executive Director



## 5.3 Socio-Economic and Cultural Profile

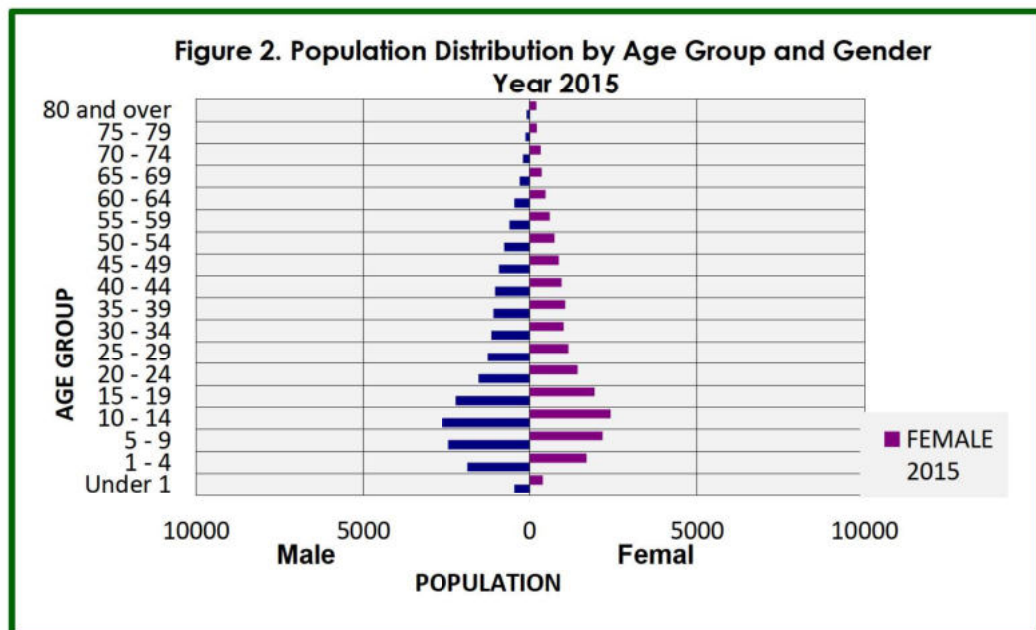
### 5.3.1 Political Subdivision

Magallanes is divided into 34 barangays, ten (10) barangays are considered within the Urban Area namely Central, Aguada Norte, Aguada Sur, Banacud, Bacolod, Binisitahan Norte, Binisitahan Sur, Cawit Extension, Cawit Proper and Pantalan. Barangays Aguada Norte and Bacolod are the largest and smallest urban barangays, respectively. Twenty four (24) barangays are considered as Rural Areas. Barangay Siuton is the largest while Ginangra is the smallest among these rural barangays which consists of Anibong, Bacalon, Biga, Behia, Biton, Bulala, Busay, Caditaan, Cagbolo, Cagtalaba, Ginangra, Hubo, Incarizan, Lapinig, Magsaysay, Malbog, Pawik, Salvacion, Sta. Elena, Siuton, Tagas, Tula-Tula Norte and Tula-Tula Sur. Barangays Biga and Behia are situated in Bagatao Island.

### 5.3.2 Demography

**Population Distribution and Composition.** The municipality of Magallanes has a total population of 37,038 with 19,029 males and 18,009 females based on the Philippine Statistics Authority (PSA) Census Report of 2015. The school going population for both sexes are 16,447 with elementary (ages 6-11) has the highest percentage. The number of populations 15 – 64 years old in the municipality is 21,200 with young dependent population of 14,052 and old dependent population of 1,786 resulting to 75% total dependency ratio. The high result indicates that the economically active population or the labor force and the overall economy of the municipality faces a greater demand to support and provide the basic social services needed by children and by older persons who are economically dependent. The young dependency ratio of 66% much higher than the old dependency ratio of only 8% implies a higher need to invest on schooling and child – care.

The age – group population structure (Figure 2) shows that the municipality has a dominant young population consisting of age groups 1 to 19 years old. The broad – based pyramid resulted from a high fertility and mortality in the past. It also shows that there are 106 males for every 100 females which indicate predominance of male population.



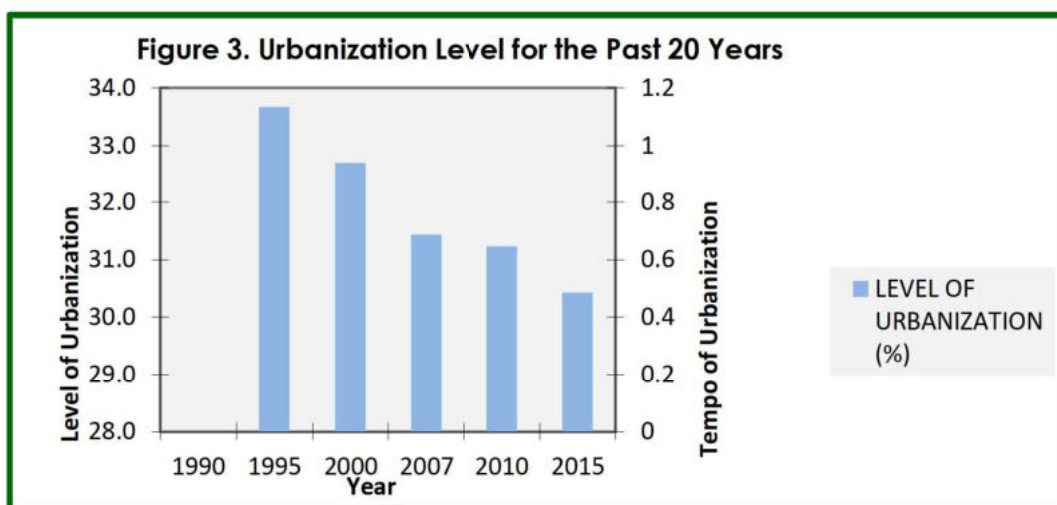
**Urbanization.** In terms of urbanization, as shown in Figure 3, Magallanes has a decreasing urbanization level. This can be attributed to the number of urban barangays which is only 10 out of 34 barangays and also for the past 20 years, as the urban population increases so is the rural population. Economic activities and opportunities are present in the urban areas but immigration is not common since the primary livelihood of most of the populace is present in the rural areas. The central business district is only a market or place for exchanging goods and services but not necessarily the place where people need to move in.

In 2015, municipality of Magallanes had an urban population of 11,269 representing 30 percent of the total population of the municipality (Table 4). This means that for every 100 residents in Magallanes, 30 live in the urban areas. On the other hand, the rural population is composed 25,769 individuals or 70 percent of the total population.

**Population Density.** Population density refers to the number of people occupying an area of land which indicates the pattern of population distribution and serves as an indicator of urbanization of an area. The gross population density of Magallanes was computed at 338 persons living per square kilometer considered as Low-Density Area. Among urban barangays, Barangay Bacolod has the highest density having 37,692 individuals per square kilometer while the most thinly populated are Barangays Aguada Norte and Aguada Sur, having 517 and 526 individuals per square kilometer. While these three barangays belong to urban areas, Barangay Bacolod has the highest population density occupies a small area and having large population and it's nearer the central business district. The barangay with the highest



population density among rural barangays is Behia with 1,031 individuals per square kilometer. It can be observed that all barangays in the rural area are thinly populated though some have large population since it occupies a greater land area.



**Population Trend.** Magallanes has a total population of 37,038 and a total household of 7,786 with an average household size of 5 individuals based on PSA Census 2015 and RCBMS Survey 2014. Among urban barangays, the most populated is Barangay Cawit Extension (1,727) and the least populated is Barangay Poblacion (Central) (648). On the other hand, Barangay Caditaan with a total population of 3,443 has the greatest number of individuals among rural barangays while Barangay Magsaysay with only 262 individuals has the least population. Since rural area is composed of 24 barangays, its total population (25,769) is higher compared to urban area (11,269). This indicates that in the municipality, though some barangays are far from the central business district, migration to urban barangays is not an option mainly because the livelihood of households who are mostly farmers and fishermen are present in their area. The presence of good transportation facilities and accessible road networks makes it easier also to reach the central business district.

**Table 6. Urbanization Level**

Barangay	Population	Household	Average Household Size
<b>URBAN:</b>			
1. Aguada Norte	1,515	341	4
2. Aguada Sur	1,159	252	4
3. Bacolod	1,027	204	5
4. Banacud	1,240	283	4
5. Binisitahan Norte	917	194	4
6. Binisitahan Sur	682	156	4
7. Cawit Extension	1,727	330	5
8. Cawit Proper	1,184	250	5
9. Central	648	139	4
10. Pantalan	1,170	231	5
<b>SUB-TOTAL</b>	<b>11,269</b>	<b>2,380</b>	<b>4.4</b>
<b>RURAL:</b>			
1. Anibong	493	90	5
2. Bacalon	650	148	5
3. Biga	1,194	218	5
4. Behia	2,518	473	5
5. Biton	2,011	451	5
6. Bulala	610	93	5
7. Busay	604	106	5
8. Caditaan	3,443	801	4
9. Cagbolo	1,120	241	5
10. Cagtalaba	557	109	5
11. Ginangra	781	167	5
12. Hubo	869	209	4
13. Incarizan	1,387	269	5
14. Lapinig	761	165	5
15. Magsaysay	262	50	5
16. Malbog	343	83	5
17. Pawik	638	155	5
18. Pili	1,371	295	5
19. Salvacion	1,044	233	5
20. Santa Elena	1,144	226	5
21. Siuton	1,959	416	5
22. Tagas	483	115	4
23. Tula-Tula Norte	911	172	5
24. Tula-Tula Sur	616	121	5
<b>SUB-TOTAL</b>	<b>25,769</b>	<b>5,406</b>	<b>4.88</b>
<b>TOTAL</b>	<b>37,038</b>	<b>7,786</b>	<b>4.6</b>

Source: 2015 PSA Census Report & 2014 RCBMS Survey



**Population Growth.** The municipality of Magallanes has a positive growth rate except for the year 1975 and 1990. As shown in Table 5, in the year 1970, the municipality experienced the highest increase in population with an additional 5,752 individuals from year 1960. It can also be observed that there was a 3.01 % growth rate in year 1995 given that in the year 1990 the municipality experienced a negative growth rate. For the current Censal year 2015, Magallanes has a total population of 37,038 with 0.88 % growth rate.

**Table 7. Historical Growth of Population**

YEAR	POPULATION	INCREASE/ DECREASE	ANNUAL GROWTH RATE (%)			
			MUNICIPAL	PROVINCIAL	REGIONAL	NATIONAL
1903	4,921					
1918	10,012	5,091	4.85			0.09
1939	15,412	5,400	2.08			0.07
1948	17,982	2,570	1.73			0.14
1960	18,144	162	0.07			0.12
1970	23,896	5,752	2.79			0.13
1975	23,101	-795	-0.67			0.23
1980	25,765	2,664	2.21			0.23
1990	24,754	-1,011	-0.40			0.13
1995	28,707	3,953	3.01	0.13	0.23	0.22
2000	31,315	6,561	2.38	0.12	0.22	0.23
2007	34,418	5,711	1.52	0.12	0.22	0.23
2010	35,443	3,128	0.96	0.12	0.22	0.23
2015	37,038	1,595	0.88	0.12	0.22	0.23

Source: National Statistic Office

### 5.3.3 Economic Profile

#### Agriculture and Agri-Industry Facilities

**Agriculture.** The current economic structure of the municipality is basically that of agriculture and commerce and trade. Agricultural activities are focused on crop production, fishery and livestock production. However, the dominant agricultural activity and economic source of the municipality is fishery both for marine and inland fishing. There are 7,307 registered fisherfolks from 21 coastal barangays of the municipality and there are 1,290 farmers coming from 26 farming barangays.

**Crop Production.** Areas devoted to agricultural crop production comprises a total area of 75.892 hectares for rainfed and 230.09 hectares for irrigated with a total of 305.982. Major crops within these agricultural lands are rice, corn, coconut, banana and root crops. Of these

major crops, coconut occupies about 86 % or is the dominant crop while rice farms comprise of 334.45 hectares located in 13 different barangays. There are 11.583 hectares of rice farms that are highly susceptible to flooding, 11.31 hectares are moderately susceptible while 203.985 hectares have low susceptibility. On the other hand, rice farms that are highly susceptible to landslide comprise of 0.07 hectares, 2.69 hectares are moderately susceptible and 14.08 hectares have low susceptibility. No rice farms are susceptible to storm surge.

**Agriculture Facilities.** Agriculture facilities available within the municipality are the rice mills owned by private individuals in Barangays Caditaan, Pili, Pawik, Siuton, Tula – Tula Norte and Banacud. There are also private threshers in Barangays Caditaan, Siuton, Bacalon and Pili. The Local Government Unit through the Office of Agriculture provided 25 hand tractors for farmers in Barangays Pili, Bacalon, Caditaan, Siuton, Pawik and Incarizan as well as multi – purpose drying pavement in Barangay Sta. Elena. There is also a diversion dam – an irrigation facility in Barangay Incarizan and shallow tube well – an irrigation equipment in Barangays Incarizan, Caditaan and Barangay Salvacion.

**Livestock.** There are some small-scale livestock farms operating within the municipality particularly goat and hog livestock produced in Barangays Sta. Elena and Pili occupying an area of 1.50 hectares. On the other hand, there are no farmers engaged in poultry production.

**Fisheries.** For fishery production, marine fishing grounds are concentrated in Ticao Pass and part of Sorsogon Bay along coastal barangays of Anibong to Biton with an estimated area of 79.500 square kilometers. In 2012, the average volume of catch is estimated at 372,768 tons and was supplied to the local market. On the other hand, inland fishing in the municipality consists of bangus, prawns and tilapia raised in fish ponds. These fish ponds are located in Barangays Aguada Norte, Aguada Sur, Bacalon, Caditaan, Ginangra, Hubo and Salvacion with an estimated area of 291.51 hectares and average production of 11.74 tons annually. There are 11.31 hectares of fishponds that are highly susceptible to flooding, 55.78 hectares are moderately susceptible while 224.42 hectares have low susceptibility. In terms of storm surge, 1.13 hectares are highly susceptible, 19.47 hectares are moderately susceptible and 40.219 hectares have low susceptibility. No fishpond areas are susceptible to landslide.



**Table 8. Existing Major Agricultural Crops by Area, Production and Market, Year 2015**

Major Crops	Location	Area		Annual Production		Product Market	Number of Farmers	Number of Tenants	Type of Farming Technology	Existing Agricultural Support Facilities	
		Ha.	% Utilization	Volume	Value (Php)					Pre-Harvest	Post-Harvest
1. Rice	Aguada Norte	0.57	100 %			Local			Ecological		
	Aguada Sur	1.0	100 %			Local			Ecological		
	Anibong	0.77	100 %			Local			Ecological		
	Bacalon	17.2	100 %	4.3	60,200	Local	21		Traditional	-	3*
	Biga	2.0	100 %			Local			Ecological		
	Behia	0.25	100 %			Local			Ecological		
	Biton	1.94	100 %			Local			Ecological		
	Busay	1.0	100 %			Local			Ecological		
	Caditaan	34.0	100 %	3.93	55,000	Local	44		Ecological	4*	4
	Cagbolo	3.0	100 %			Local			Ecological		
	Cagtalaba	3.32	100 %			Local			Ecological		
	Ginangra	10.7	100 %			Local			Ecological		
	Hubo	11.55	100 %			Local			Ecological		
	Incarizan	34.95	100 %	4.2	58,800	Local	48		Ecological	-	2
	Lapinig	0.9	100 %			Local			Ecological		
	Malbog	0.25	100 %			Local			Ecological		
	Pawik	18.74	100 %	3.95	55,300	Local	25		Ecological	1*	1

	Pili	55.33	100 %	4.87	68,180	Local	66		Ecological	19*	15
	Salvacion	19.24	100 %	3.5	49,000	Local	35		Ecological	-	2
	Siuton	33.7	100 %	4.4	61,600	Local	76		Ecological	1*	7
	Sta. Elena	59.75	100 %	4.1	57,400	Local	77		Ecological	-	1
	Tagas	1.29	100 %			Local			Ecological		
	Tula-Tula Norte	22.5	100 %	4.04	56,560	Local	26		Ecological	1*	3
2. Corn	26 barangays	35.5	14%	3.3	66,666	Local			Ecological	-	-
3. Coconut	26 barangays	7,051	100 %	1.4	187,556.50	Local				-	-
4. Banana	26 barangays	546	100 %	751.50	11,272,500	Local				-	-
5. Root crops	26 barangays	206	100 %	2,678	26,780,000	Local				124	-

\*Hand tractor

\*\*Thresher/Rice Mill

**Table 9. Existing Livestock and Poultry Farms, Year 2015**

Type	Barangay	Area (Has.)	No. of Heads	Production Classification	Production		Product Market	No. of Tenants
					Volume	Value		
Livestock								
Hog	Sta. Elena	1		small	0.8	36,000.00	Local	2
	Pili (Maransas)	0.50		small	5	500,000.00	Local	1



**Table 10. Fishing Grounds and Aquaculture Production, Year 2015**

Fishing Grounds	Barangay (Location)	Production		Post-Harvest Facilities				Produce Market (local, export)
		Volume	Value	Type	No.	Capacity	Status	
Marine Fishing Ground (Marginal fishing, small commercial fishing)	Ticao Pass and part of Sorsogon Bay from Barangays Anibong to Biton	372,768	26,093,760.00	-	-	-	-	Local
Inland Fishing (Fish ponds)	Aguada Norte (42.59 has.)	11.74	-	-	-	-	-	Local
	Aguada Sur (27.98 has.)							Local
	Bacalon (80.338 has.)							Local
	Caditaan (56.94 has)							Local
	Ginangra (3.53 has.)							Local
	Hubo (1.99 has.)							Local
	Salvacion (78.1 has)							Local

## COMMERCE, TRADE AND INDUSTRY

For the past five years, commercial activities in the municipality have grown. Primary economic activities such as agriculture, fishing and forestry and tertiary economic activities like wholesale and retail trade and other services had an increasing trend while secondary economic activities those of gas and water supply remain the same. Though Magallanes is basically farming and fishing community, few individuals engaged in primary activities due to higher capitalization and volume of product required and most of the time, products derived from farming and fishing are often sold by farmers and fishermen to businessmen in order to meet their daily sustenance.

Commercial establishments are concentrated in Barangay Poblacion which is considered as the Central Business District of the municipality and some are /located in adjacent urban barangays. At present, there's still no industrial establishment present in the locality.

Being an agricultural municipality, it is expected that most of the industries in Magallanes is agri-based. However, for the past years due to depleting natural resources and changes in the environment, farmers, fishermen and common residents had to develop other alternative source of livelihood and thus, non – agricultural commercial activities were adopted.

### 5.3.4 Infrastructure Services

**Roads and Bridges.** The present condition of transportation network in Magallanes for both internal and external linkages can be considered good enough. There are about 165.48 km. of roads that connect the municipality to neighboring towns and city. These include 24 km. national roads, 21 km. provincial roads, 76.79 km. municipal roads, and 47.26 km. barangay roads. Majority of these roads are made of concrete and are of fair condition. The municipality has also 19 bridges located in different barangays and majority of which are still in fair condition.

**Public Land Transportation.** Commuters in the locality are being served by three (3) buses with route from Magallanes to Metro Manila provided by two (2) private bus operators namely Elavil and Smart Bus Transportation. There are also 37 jeepneys and



143 tricycles provided by local operators. Meanwhile, the municipality has a jeepney terminal with facilities such as comfort rooms located in Barangay Banacud and it is in fair condition.

**Magallanes Transport Terminal.** The Magallanes Transport Terminal located in Barangay Banacud was constructed in 2017 which accommodates buses travelling from Magallanes to Pasay or Cubao and Public Utility Jeepneys travelling from Magallanes to Sorsogon via Juban and Casiguran. Other facilities available in the terminal are ticket booth, comfort rooms and food stalls.

**Magallanes Tricycle Terminal.** The Magallanes Tricycle Terminal located in Barangay Poblacion was constructed in 2016 that accommodates all tricycle operators in the municipality. Since the terminal is adjacent to the public market, facilities available are comfort rooms and food court.

**Road Segments that Need Investments.** Based from the Local Road Network Development Plan (LRNDP) of the municipality, Magallanes – Juban Provincial Road needs widening and drainage construction while Magallanes – Bulan Provincial Road needs widening and re-blocking as well as construction of drainage. Majority of the municipal roads also needs improvement in the form of concreting, re-blocking and drainage construction while some barangay roads also need concreting and bridge construction as in the case of Dumalwa Road going to the water source.

**Power Source.** Electricity in the municipality is distributed to the 34 barangays through the Sorsogon Electric Cooperative I (SORECO I), the local electric cooperative servicing the southern part of Sorsogon province. Eighty – two percent (82%) of households in Magallanes are served by electricity. Among urban barangays, Barangay Aguada Norte has the greatest number of households served by electricity while Barangays Banacud and Binisitaha Sur have the least number of unserved households. In rural barangays, Barangay Caditaan has the greatest number of households served by electricity being also the most populated while Barangay Biton has the greatest number of unserved households. It can also be noted that in Barangay Hubo, there are more households unserved by electricity than those who are served.

**Water Services.** There are two (2) waterworks system existing in the municipality, a bigger Level III system which serves most of the barangays in the municipality and a smaller Level III system which serves selected barangays adjacent to the water source, both are managed and operated by the Local Government Unit.

**Magallanes Water System.** The Magallanes Water System which started its operation in year 2000 supplies much of the municipality's barangays especially the poblacion area. Its main source of water comes from Dumalwa Spring located in Barangay Incarizan. At present, it has 2,401 connections in Barangays Aguada Norte, Aguada Sur, Bacolod, Banacud, Behia, Biga, Binisitahan Sur, Binisitahan Norte, Cawit Extension, Cawit Proper, Poblacion, Pantalan, Sta. Lourdes, SIADELL and Sitio Tinago.

**CAANAS.** Caditaan, Aguada Norte, Aguada Sur or CAANAS provides water for Sitio Binalyuhan, Barangay Caditaan and Sitio Telegrafo. Its main source of water comes from Bucal-Bucalan Spring situated in Barangay Aguada Norte and presently has 587 connections.

**Level I Water System.** Based on the Community Sanitary Survey conducted by the Municipal Health Office conducted in 2017, the Level I source of drinking water in the municipality includes shallow well, deep well and improved spring. There are six (6) barangays with access to shallow well water source which serves a total of 148 households and there are nine (9) barangays accessing a deep well source which provides water to 355 households. Another Level I water source present is the improved spring which is being utilized in 19 barangays serving 1,063 households. Shown in the graph below are the numbers of households in different barangays with access to Level I Water System.

**Communication.** In terms of communication, Magallanes has two broadcast and television network provider namely Bulan Satellite Television and Dream Cable Television. These provide connections to household subscribers making available to viewers' television programs from various channels both local and foreign. There are 10 internet providers owned by private individuals located in urban barangays. The town is also a host to three cellular sites operated by SMART, Globe Telecom and Sun Cellular making cellular phone and wireless Internet as the most effective, affordable and



accessible means of telecommunication in the locality. A public postal office also operates in the municipality.

### 5.3.5 Institutional Profile

The local administration of the municipality of Magallanes, focuses on its local organizational structure and fiscal management based on the provisions of Republic Act 7160 or the Local Government Code of 1991. The present local organizational structure per R.A. 7160 provisions, all mandatory appointive officials have been filled-up namely, Secretary to the Sangguniang Bayan, Municipal Assessor, Municipal Accountant, Municipal Budget Officer, Municipal Planning and Development Officer, Municipal Health Officer, Municipal Engineer, Municipal Civil Registrar, Municipal Agriculturist and Municipal Social Welfare and Development Officer.

At present, the Municipal Environment and Natural Resources Office (MENRO) is not yet created. The absence of MENRO is a big factor that affects the formulation and implementation of environmental programs in the municipality. It is imperative that the LGU create this office and clearly establish its mandates, duties and responsibilities.

The municipal government employee size as of 2021 is shown in Table Ins-1. The number of career service positions authorized by the Department of Budget and Management (DBM) is 185, and the local government unit of Magallanes only filled-up 85 permanent positions and six (6) temporary positions with a vacancy of 94 positions. For non-career positions, there are 11 elective positions, one (1) co-terminus and one (1) vacant (co-terminus) positions. In terms of employee size, the LGU has 49 % filled-up capacity.

In terms of educational status, majority of the employees are college graduate with 72 percent and only 28 percent are either high school or elementary graduates. Appointive positions have 49 percent first graders, 11 percent second graders and 40 third graders in terms of eligibility status.

The trend on fiscal management shows that for the past five years, the local government had an increasing budget and expenditures as indicated in Table 11.



**Table 11. Existing Municipal Government Employee Size, 2021**

CAREER POSITIONS	NUMBER	NON-CAREER POSITIONS	NUMBER
Permanent	85	Elective	11
Temporary	6	Co-Terminus	1
Vacant	94	Vacant (Co-Terminus)	1
<b>TOTAL</b>	<b>185</b>	<b>TOTAL</b>	<b>13</b>

**Table 12. Employee Educational Status and Eligibility, 2017**

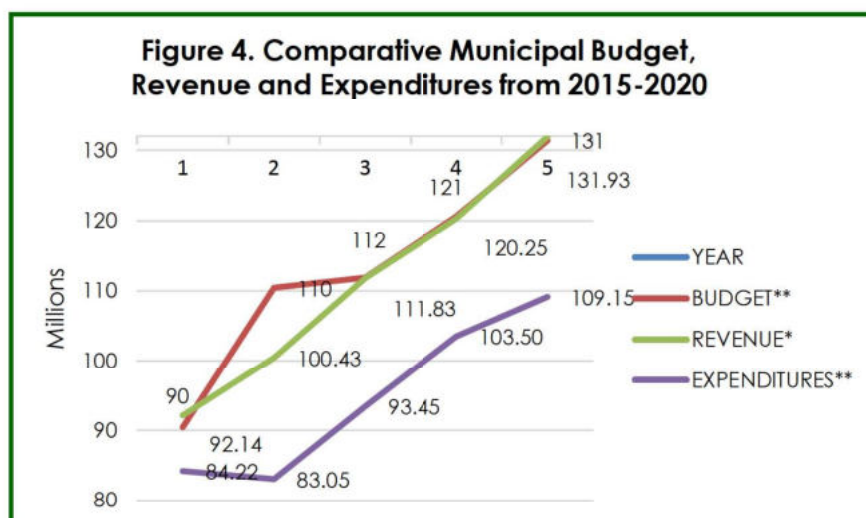
EDUCATIONAL STATUS			ELIGIBILITY STATUS		
Educational Attainment	Number	% to Total	Grade Eligibility	Number	% to Total
College Graduate	74	72	First Grades	51	49
High School or Elementary Graduate	29	28	Second Grades	11	11
			Third Grades	41	40
<b>TOTAL</b>	<b>103</b>	<b>100</b>	<b>TOTAL</b>	<b>103</b>	<b>100</b>

**Table 13. Comparative Municipal Budget, Revenue and Expenditures, Year 2015-2020**

YEAR	BUDGET**	REVENUE*	EXPENDITURES**
2015	90,455,094.00	92,137,390.00	84,215,760.33
2016	110,426,696.00	100,427,853.00	83,049,233.26
2017	111,887,738.00	111,834,079.00	93,449,924.67
2018	120,610,856.00	120,246,811.00	103,502,094.96
2019	131,425,845.00	131,934,066.00	109,150,586.26

Source: \*\*Municipal Budget Office

\*SRE Report of MTO



### 5.3.6 Climate and Hazard Profile

Table 14. Projected Changes in Climate Variables, Municipality of Magallanes, Province of Sorsogon

Climate Variable	Observed Baseline (1971-2000)	Projected Change (2036-2065)	General Changes in Climate Variables	Information about Patterns of Change	Population	Natural resources	Critical Facilities	Urban Use Areas	Infrastructure and Utilities
A	B	C	D	E	F	G	H	I	J
Temperature	25.9 °C during DJF  27.4 °C during MAM  27.9 °C during JJA  27.3 °C during SON	<b>Moderate Emission:</b> Lower Bound DJF – 1.0 MAM – 1.0 JJA – 1.0 SON – 1.0  Median DJF – 1.2 MAM – 1.2 JJA – 1.2 SON – 1.1  Upper Bound DJF – 1.6 MAM – 1.6 JJA – 1.7 SON – 1.8  <b>High Emission:</b> Lower Bound DJF – 1.2	<b>Moderate Emission:</b> Lower Bound DJF – 26.9 MAM – 28.4 JJA – 28.9 SON – 28.3  Median DJF – 27.1 MAM – 28.6 JJA – 29.1 SON – 28.4  Upper Bound DJF – 27.5 MAM – 29 JJA – 29.6 SON – 29.1  <b>High Emission:</b> Lower Bound DJF – 27.1	Increase in temperature both in moderate emission and high emission	All population	Fishery, agriculture, livestock, forest	Schools, Health Centers, Child Development Centers, Barangay Hall, Church/Chapels, Municipal Buildings	Residential, Commercial, Tourism	Roads, electric posts





Number of Hot days	360 days	<p>SON – 1.1</p> <p><b>High Emission:</b> Lower Bound DJF – -2.2 MAM – -4.5 JJA – -23.6 SON – -14.4</p> <p>Median DJF – 13.1 MAM – 7.3 JJA – -4 SON – -1.2</p> <p>Upper Bound DJF – 36.0 MAM – 18.3 JJA – 5.8 SON – 9.4</p>	<p>SON – 983.9</p> <p><b>High Emission:</b> Lower Bound DJF – 936.6 MAM – 447.1 JJA – 504.7 SON – 833</p> <p>Median DJF – 1083.4 MAM – 459 JJA – 633.9 SON – 962.2</p> <p>Upper Bound DJF – 1303.0 MAM – 506.3 JJA – 672.5 SON – 1065.4</p>	Significant increase of hot days expected in 2020 to 2050	All population	Fishery, agriculture, livestock, forest	Schools, Health Centers, Child Development Centers, Barangay Hall, Church/Chapels, Municipal Buildings	Residential, Commercial, Tourism	Roads, electric posts
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Number of Dry days	6,378 days	7,288 dry days in 2020 and 6,816 dry days in 2050	2020: Increased by 910 dry days 2050: Increased by 438 dry days	Lesser dry days in 2050	All population	Fishery, agriculture, livestock, forest	Schools, Health Centers, Child Development Centers, Barangay Hall, Church/Chapels, Municipal Buildings	Residential, Commercial, Tourism	Roads, electric posts
Extreme daily Rainfall Events	1 extreme rainfall events exceeding 300 mm	42 days with >300mm of rain in 2020 47 days with >300mm of rain in 2050	2020: 43 days with rainfall >300mm 2050: 48 days with rainfall >300mm	More extreme daily rainfall in 2020 and 2050	All population	Forest, marine, coastal and vegetation	Rural health unit, Municipal Building, schools, church and chapels	Commercial areas or the whole poblacion area	Power lines, water connections, sewerage, solid waste disposal facilities or material recover facility
Sea Level		Projected change by 2100 relative to 1986-2005 Global mean sea level 0.26 to 0.55 m for RCP 2.6 0.32 to 0.63 m for RCP 4.5 0.33 to 0.63 m for RCP 6.0 0.45 to 0.82 m for RCP 8.5	Potential increase in the current sea level by 2100	A potential increase in global sea level by a range of 0.26 to 0.82m by 2100. The municipal projected sea level rise may vary from global estimates depending on rates of thermal	All population	Forest, marine, coastal and vegetation	Rural health unit, Municipal Building, schools, church and chapels	Commercial areas or the whole poblacion area	Power lines, water connections, sewerage, solid waste disposal facilities or material recover facility

						expansion of the oceans and atmospheric circulation which needed further study.					
Typhoon/Super Typhoon	20 Strong wind / heavy rain events						All population	Forest, marine, coastal and vegetation	Rural health unit, Municipal Building, schools, church and chapels	Commercial areas or the whole poblacion area	Power lines, water connections, sewerage, solid waste disposal facilities or material recover facility

**Table 15. Hazard Inventory Matrix, Municipality of Magallanes, Province of Sorsogon**

Hazard	Map Information			Hazard Description				
	Source	Scale	Format/ Date/ Reference System	Susceptibility	Magnitude	Speed of Onset	Frequency and/or Duration	Areas Covered
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>
Flood	MGB	1:10,000	Shapefiles/2015/Luzon 1911 – UTM Zone 51N	Low, Moderate High		Sudden	During typhoon and heavy rains	All barangays have flood prone areas
Rain-Induced Landslide	MGB	1:10,000	Shapefiles/2015/Luzon 1911 – UTM Zone 51N	Low, Moderate High		Sudden	During typhoon and heavy rains	Upland rural barangays
Storm Surge	MGB	1:10,000	Shapefiles/2015/Luzon 1911 – UTM Zone 51N	Low, Moderate High		Sudden	During typhoon, intense wind and high tide	Coastal barangays

## Projected Changes in Climate Variables

According to the province's vulnerability assessment, the following observations were noted:

- The strategic location of the province facing the Pacific Coast highlights its exposure to abnormal climatic factors like red tide occurrence, epidemic diseases, El Niño/La Niña and extreme rain events brought about ITCZs (inter-tropical convergence zone) and prolonged northeast and southwest monsoons.
- Tropical cyclone occurrences of 9-19 times annually with four (4) typhoons directly hitting the province every three (3) years.
- The province is susceptible to hydro meteorological and geological hazards which both can cause damages to property, loss of life, injury and economic disruption in the province.
- There is a constant threat of destruction from volcanic eruption of Mt. Bulusan to the immediate danger zones.
- There is a threat of ground shaking because of nearby fault lines.
- There is a population pressure on the protection land and informal settlers along the coastal zone area.

## Historical Occurrences and Disasters

**February 2008 Landslide and Flood.** This is marked as the very disastrous occurrence in the history of Magallanes when heavy continuous and unabated rains due to a Low Pressure Area for almost two weeks happened in February 2008 that caused the heavy flooding and landslide of the two mountains in the municipality. The landslide buried a long stretch of road connecting Magallanes to Juban, thereby preventing any form of land transportation from coming in and out of the Poblacion Area of Magallanes, killed several people, buried 90% of the LGU's water source facilities, burying in mud seven houses, damaging 15 hectares of Riceland tilled by 19 farmers which cause suffering from hunger of many families.

May 1, 2009. After a year, another disaster occurred in the municipality, barangay Hubo suffered heavy devastation caused by flooding and landslide that occurred on May 1, 2009 as a consequence of Tropical storm Dante which lashed heavy rains triggering widespread flash floods and major landslide where part of Barangay Hubo was almost wiped out. Flashflood carrying landslide debris of boulders, uprooted trees, and loose soil rushing the mountainside



resulted to the burying of several residents alive and several human casualties downstream along rivers and coastal areas. Based on the report of the MDRRMC, the total population affected numbered to 109, 18 are dead and while 5 are injured.

**Storm Surge (August 2012).** The effect of the southwest monsoon (Habagat) and constant weather disturbance does not spare the municipality from suffering its devastating effects and damages. Said habagat brings unusual high tides and storm surges which caused flooding to the communities near and along the seashores. Dwellings and properties along the coastal areas were damaged. Fear for their safety and the uncertainty brought by said circumstances are always in the hearts and minds of the affected constituents. The livelihood and daily subsistence of our fishermen were also very much affected since they can no longer go on fishing due to storm surges that occurs for almost whole month of August and September which causes suffering from hunger of many families.

**Typhoon Yolanda (November 7 – 8, 2013).** Typhoon Yolanda brought severe devastation to Bicol Region and Samar Provinces. In the municipality of Magallanes, there are 572 households affected by the typhoon which constitutes 2,956 individuals; eight (8) houses are totally damaged and one (1) is partially damaged.

**Typhoon Glenda (July 15-16, 2014).** The Municipality of Magallanes was placed under the state of calamity wherein right on the day of Celebrating its 154th Foundation anniversary suffered a severe beating from the strong winds and heavy rains brought about by the landfall of Typhoon Glenda which wrought destruction to properties, infrastructure facilities, large trees fell within the población area and along the highways and caused the evacuation of many families in the flood prone and low-lying communities.

**Typhoon Nona (December 14-15, 2015).** Another fateful day that Magallanes was brought to its knees by the sheer force of Typhoon Nona which, before taking its disastrous exit in the municipality of Magallanes, have also wreaked havoc on other Municipalities of the Province of Sorsogon. The total number of evacuees reached 11,852 persons housed in various identified evacuation centers all over the municipality while some 6,972 persons evacuated to areas not declared as evacuation center such as neighbors, churches and others. Records show that number of partially destroyed houses is 3,294 and totally destroyed is 2,020 with a grand total of 5,314. Electricity was also temporarily cut-off causing brownout for almost three months in the entire Municipality.

**Tropical Depression Usman (December 28-29,2018).** Magallanes suffered heavy rains and severe flooding brought about by the Tropical Depression USMAN. Upon assessment of the MDRRMC it was determined that the typhoon damage especially those brought about heavy rains and floods were considerable as it many roads to be temporarily impassable and generally clogged canals and waterways with debris which further contributed to the flood. Destroyed on-going public infrastructures and aggravated other situations associated with calamities. There is also considerable damage in agriculture and fisheries.

**Typhoon Tisoy (December 2 2019).** The Province of Sorsogon was under Tropical warning Signal no. 3 when typhoon “Tisoy” with international named KAMURI made landfall near the Municipality of Gubat evening. The MSWDO officially reported that the total number of evacuees reached 10,858 persons housed in various identified evacuation centers all over the municipality while some 2,533 persons evacuated to areas not declared as evacuation centers such as neighbors, churches and others. It was also reported that 2,735 families have partially damaged houses and 667 have totally damaged houses with a total of 3,402 affected houses. The Municipal Agriculturist reported P88, 227.400.00 in agricultural damage, including that of Fisheries and livestock while on the infrastructure partial reported estimated damages P 37,000,000.00.

#### **Vulnerability Assessment Conducted by MGB**

**1:10,000 Scale Geo-hazard Survey and Assessment (2013).** The Mines and Geo Sciences Bureau or MGB Region 5 conducted a Geo-hazard survey and assessment in the municipality on August 21 to September 1, 2013. The assessment was conducted for all 34 barangays which aim to gather information to reduce disaster risk and conduct field assessment for landslide and flood hazards.

**Landslide Mapping.** The observed or reported landslide areas were located and measured using Geographic Positioning System or GPS, Brinton Compass and tape in order to delineate the landslide configuration. The character, mechanism of movement and the type of landslide were determined as well as slope gradient; type, character and state of underlying geologic materials; presence of discontinuities; land use and other factors were also observed and noted. The historical occurrences of landslide in the municipality were obtained through interviews in order to determine the threshold values of antecedent rain necessary for landslide



initiation. Using the Penetrometer, undisturbed materials on the landslide scarp were examined to measure the strength of soil materials on the slope.

These undisturbed materials were likewise sampled for physical tests like soil moisture content, Atterberg limits and complete grading.

The assessment showed that, of the thirty-four (34) barangays of Magallanes, eighteen (18) have had landslide events in the recent past. Landslide is more likely to occur in areas with low to moderate high hills with steep slopes underlain by weathered volcanic pyroclastic rocks. Barangays having these terrain characteristics includes Barangays Anibong, Cagtalaba, Cagbolo, Tagas, Incarizan, Sta. Elena and Hubo. Furthermore, Barangays Anibong, Cagbolo, Cagtalaba and Tagas are highly susceptible to landslide, barangays Pawik and Salvacion have low susceptibility and the rest of the barangays are moderately susceptible.

***Flood Hazard Mapping.*** Reconstruction of flood histories in the study areas was undertaken and a denser sampling through interviews was made. Overbank events, flood depths and flood durations were gathered through interviews. Selected flood events and/or typhoons were used as reference flood events.

The assessment showed that, of the thirty-four (34) barangays of Magallanes, seven (7) are highly susceptible to flooding caused by heavy rains, river overbank flows and/or storm surges; nine (9) barangays are moderately susceptible while 11 are with low susceptibility. Nearly all barangays of Magallanes have areas that are affected by floods that are either due to riverine flooding or due to storm surges. In some cases, nearly the whole barangay could be inundated. During the field survey, encountered areas affected by floods were due to heavy rains last August 24, 2013 in Barangay Siuton and Aguada Sur where the flood height reaches from 0.5m to 1.0m.

***1:10,000 Scale Coastal Geo-Hazard Survey and Assessment (2015).*** In line with the implementation of the 2<sup>nd</sup> phase of the National Geohazards Mapping and Assessment Program of the Mines and Geosciences Bureau (MGB), the 1:10,000 scale geohazard survey and assessment was undertaken for the 17 coastal areas of municipality from November 16 – 20, 2015. Field assessment showed that all of the 17 coastal barangays in Magallanes have area within their territorial jurisdiction that are prone to coastal geohazards.



**Coastal Flooding and Storm Surge.** Results from the assessment showed that seven (7) out of 17 coastal barangays are affected by coastal floods of varying intensities and all 17 coastal barangays are prone to storm surges as evidenced by significant observations in the field and/or verbal accounts from local residents. Torrential rains brought by severe weather conditions like Typhoons Glenda, Ruby and Lando, resulted to coastal flooding in Barangay Behia, Biga, Caditaan, Cagbolo, Ginangra, Aguada Sur and Biton. Moreover, a number of reported flood events were experienced in some of these barangays due to heavy rain and continuous rains in the upland areas. All coastal barangays are affected by storm surges which are located within narrow coastal plains, fluvio-marine plains, beaches and inter-tidal mudflats with mangroves and nipa. These events resulted to a significant damage to several houses situated near and along stream channels as well as those along the coast. Some barangays have existing structural mitigation measures in a form of a sea wall; however, it only extends to a few tens or hundreds of meters and are already damaged and needs reinforcement.

**Coastal Erosion.** Almost all coastal barangays are affected by coastal erosion. Erosional rates vary from a few centimeters to about 1 meter per year. Coastal erosion in 15 barangays is mostly seasonal, and depends on the prevailing winds directions such as the monsoons. Barangays located and facing Ticao Pass on the western and southwestern coasts of Magallanes are affected by coastal erosion during the Southwest Monsoon, while barangays located and facing Sorsogon Bay on the northern coasts experience pronounced erosion during the Northeast Monsoon. The MGB recommended that barangays affected by coastal erosion should prohibit any kind of sediment extraction or quarrying in the beach areas in order to mitigate the adverse effects of this natural hazard.

**Coastal Accretion.** This phenomenon was observed in Barangays Behia, Ginangra and Salvacion which is probably due to the change in prevailing wind directions such as the monsoons that resulted to accumulation and deposition of sediments in these areas.

**Slope Failure or Landslides.** Two types of landslides along the coast were documented: these are rock falls which occurred on areas with very steep to nearly vertical slopes such as sea cliffs and rock slides which occurred on areas with moderately to steep slopes. The retreating sea cliff in Barangay Biton poses great threat to residents whose houses are situated on the sides of it. The slightly indurated pumiceous lapilli tuff that underlie the cliff are acted upon by sea waves and get continuously eroded at the base which results to overhanging portions. The resulted undercut cliffs are prone to rock falls. In a portion of Barangay Cagbolo,

the shore area consists of debris materials deposited by a landslide in upslope portions. The landslide deposits reached the active inter-tidal mudflat near the barangay proper.

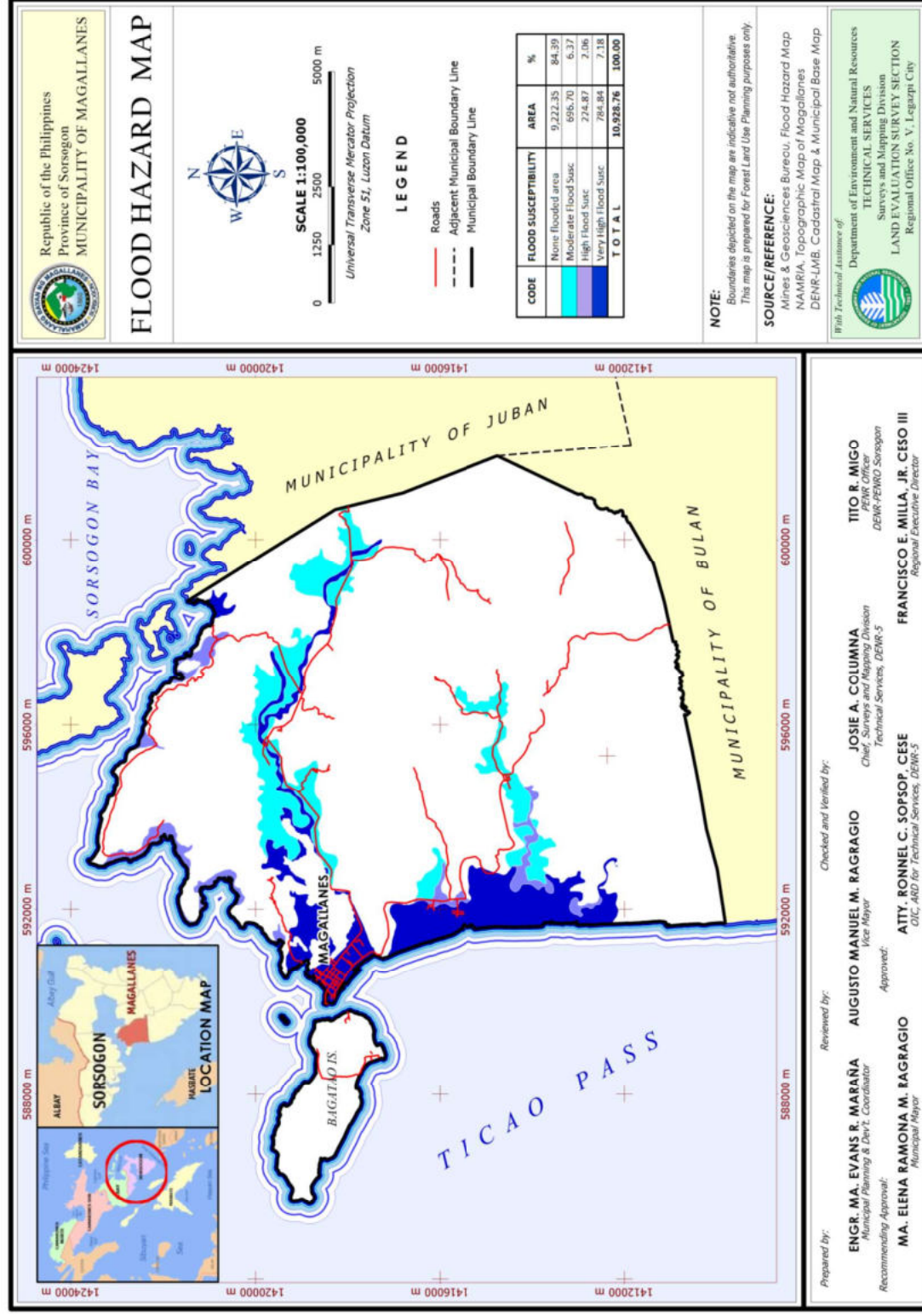
**Table 16. Hazard Susceptibility Inventory Matrix, as per CDRA conducted last July to September 2020, Municipality of Magallanes, Sorsogon**

Barangay	Flood	Rain-induced Landslide	Storm Surge
Aguada Norte	H/M/L	H	H/M/L
Aguada Sur	H/M/L		H/M/L
Anibong	H/M/L	H/M/L	M/L
Bacalon	H/M/L	H/L	
Bacolod	H/M/L		H/M/L
Banacud	H/M/L		H/M/L
Behia	H/M/L	H	H/M/L
Biga	H/M/L	H	H/M/L
Binisitahan Norte	H/M/L		H/M/L
Binisitahan Sur	H/M/L		H/M/L
Biton	H/M/L	H	H/M/L
Bulala	L		
Busay	H/M/L	H	
Caditaan	H/M/L		H/M/L
Cagbolo	H/M/L	L	M/L
Cagtalaba	M/L	L	L
Cawit Extension	H/M/L		H/M/L
Cawit Proper	H/M/L		M/L
Ginangra	H/M/L		H/M/L
Hubo	H/M/L	H	H/M/L
Incarizan	H/M/L	H/L	
Lapinig	L		
Magsaysay	M/L		
Malbog	H/M/L	H/M/L	
Pantalan	H/M/L		H/M/L
Pawik	H/M/L		
Pili	H/M/L	H/M/L	



Poblacion	H/M/L		H/M/L
Salvacion	H/M/L		H/M/L
Sta. Elena	H/M/L	L	
Siuton	H/M/L	H	
Tagas	H/M/L	L	H/M/L
Tula-Tula Norte	H/M/L	L	
Tula-Tula Sur	H/M/L		

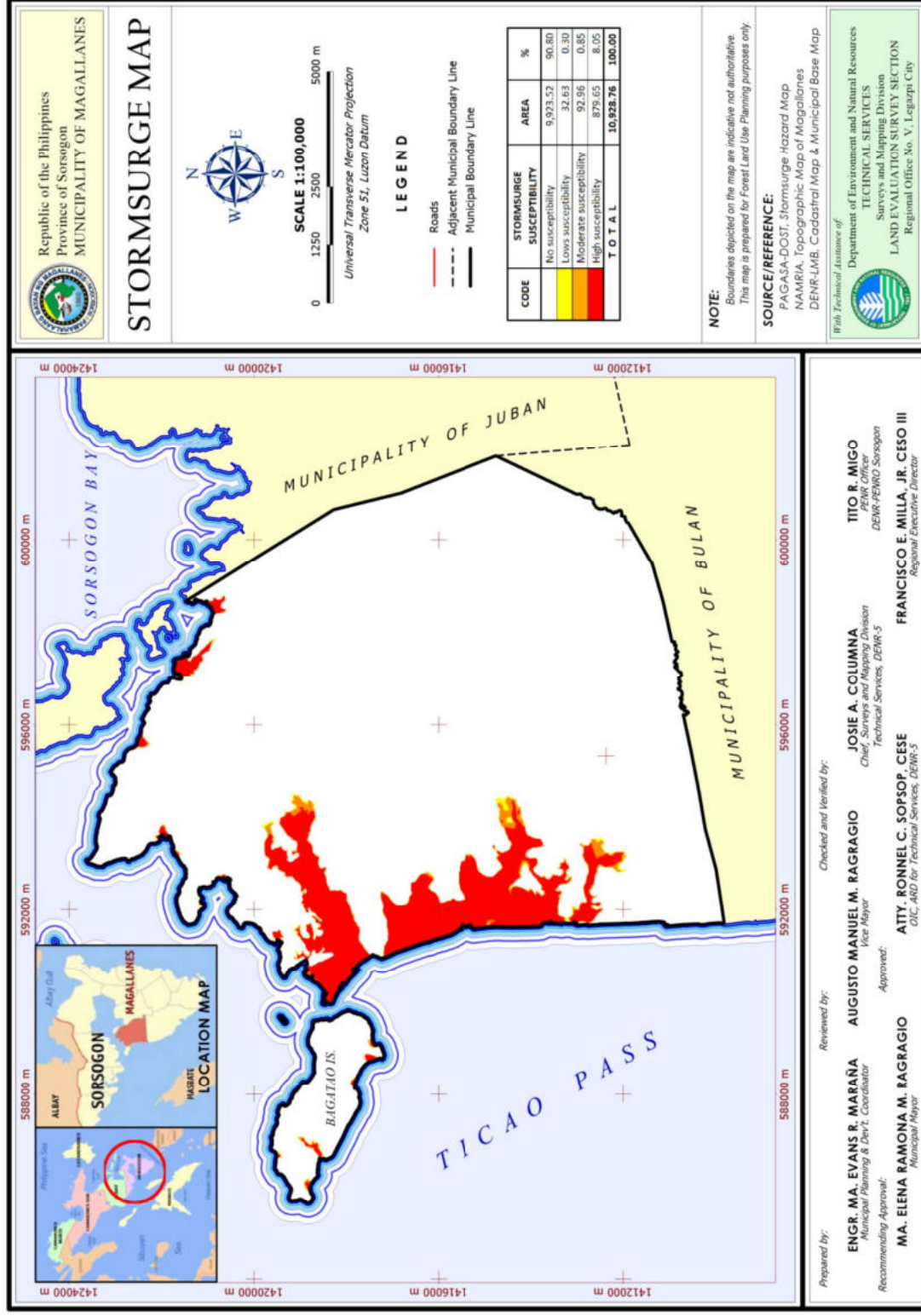
Map 14. Flood Hazard Map







Map 16. Storm Surge Hazard Map





## 5.4 Land Classification, Condition of Forest and Forestlands

### 5.4.1 Land Classification

The municipality has approximately 9,698.63 hectares or 88.74 % of alienable and disposable lands, 509.04 hectares mangrove forestland, 283.52 hectares upland forestland, 0.97 hectares small island forest land and 436.60 Juban-Magallanes Watershed Forest Reserve.

Table 17  
**Land Classification**

Municipality of Magallanes  
2021

Land Classification	Approximate Land Area (Hectare)	Relative %
Alienable & Disposable	9,698.63	88.74%
Forestland (Mangrove)	509.04	4.66%
Forestland (Upland)	283.52	2.59%
Forestland (Small Island)	0.97	0.01%
JMWFR	436.60	3.99%
<b>TOTAL</b>	<b>10,928.76</b>	<b>100</b>

Source: DENR R5

### 5.4.2 Protection and Production Forest

Forestland is divided into protection and production forests. According to the NIPAS Act, Protected Areas are defined as “identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation.” The 712.02 hectares protection forests are under the protection of law including all the biodiversity species abiding therein. No human activities should take place in the areas except for those strictly stated in the NIPAS Act.

On the other hand, the 518.11 hectares designated for production purposes are utilized by the people for their consumption such as for food, water, medicinal plants and livelihood. Among the common activities of the people in these areas are lowland rice farming, abaca and coconut production, copra making, harvesting of high value crops, gathering of minor forest products such as honey, weaving and handicraft-making.

### 5.4.3 Tenure or Ownership Rights in Forest Lands

The tenurial instruments in the forest lands of Magallanes are the Juban-Magallanes Watershed Forest Reserve, Community Base Forest Management Agreement and Ticao-Burias Pass Protected Seascope.

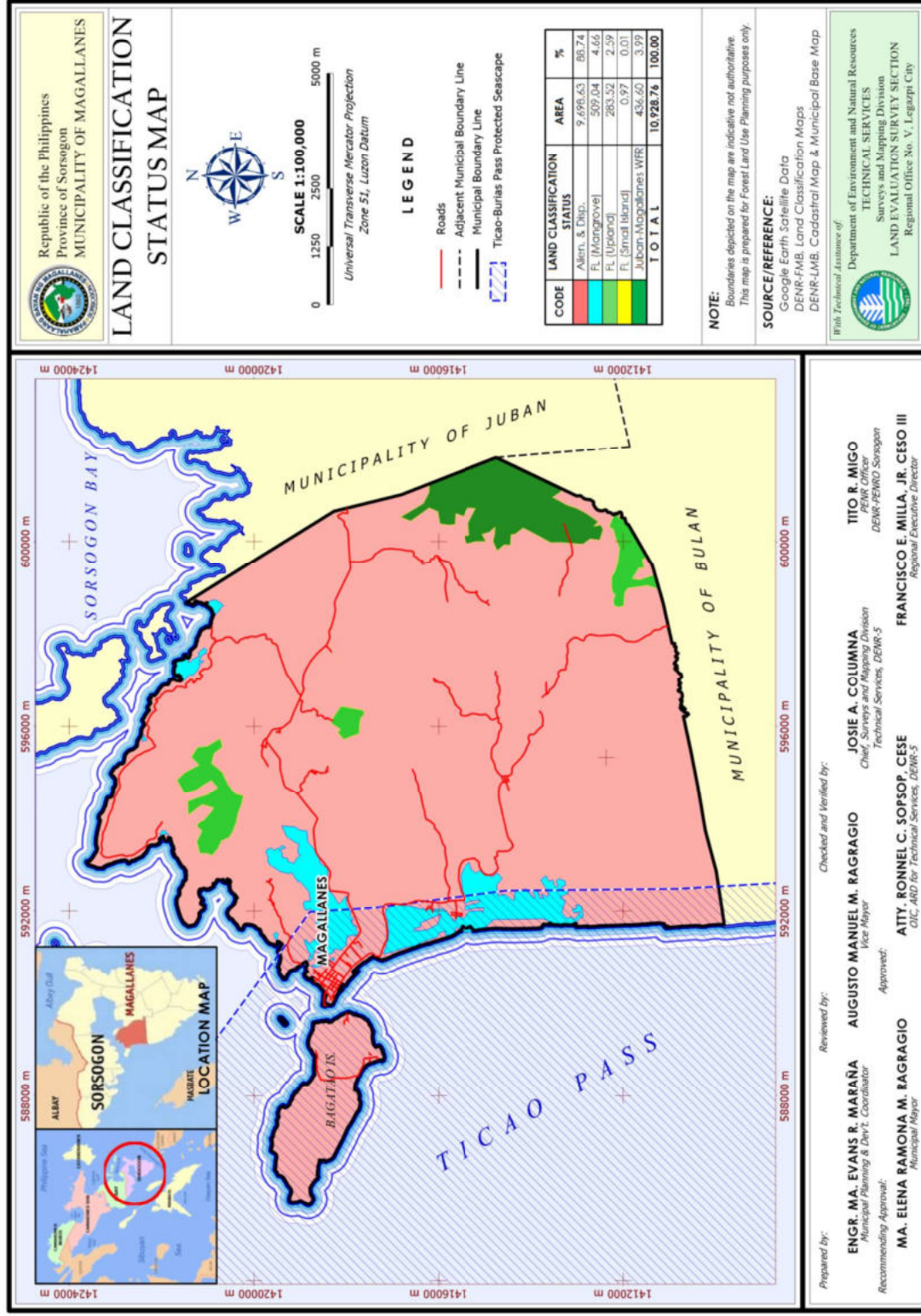
**The Juban – Magallanes Watershed Forest Reserve (JMWFR)** is the only area proclaimed as Watershed Reservation in the province of Sorsogon. It was established by virtue of Proclamation No. 108, dated November 23, 1992 by the president of the Republic of the Philippines Fidel V. Ramos. The watershed rehabilitation project contains an aggregate area of 1,032 hectares of the public domain.

**Ticao-Burias Pass Protected Seascope (TBPPS).** Pursuant to RA 11038 known as “Expanded National Integrated Protected Area System (ENIPAS) Act of 2018, Ticao-Burias Pass Protected Seascope (TBPPS) as one of the marine biodiversity corridors of the country and as the largest fishing ground in Bicol region was declared as a protected area under the administration of President Rodrigo Roa Duterte on June 22, 2018. The area serves as habitat to ecologically rich and biologically important species within its coverage of 414, 244 hectares in the provinces of Sorsogon, Albay, Camarines Sur and Masbate.

The Juban-Magallanes Watershed Forest Reserve is found to have no Indigenous Cultural Community (ICC) occupants. However, it was discovered that there is spurious titled parcel of lands inside the Protected Area. In fact, cultivated areas and physical structure such as house can be observed. It was further revealed that patents were awarded prior to its proclamation on June 01, 1992 from timberland into JMWFR. Appropriate measures must be made if we are about to save its biodiversity. Some cultivated areas are maintained by farm lot owners that reside to the adjacent barangays of the Protected Area. These farm lot owners return home to the barangay proper after their farming and extractive activities.



Map 17. Land Classification Map



**Prepared by:**  
**ENGR. MA. EVANS R. MARANA**  
Municipal Planning & Dev't. Coordinator

**Recommending Approval:**  
**MA. ELENA RAMONA M. RAGRAGIO**  
Municipal Mayor

**Reviewed by:**  
**AUGUSTO MANUEL M. RAGRAGIO**  
Vice Mayor

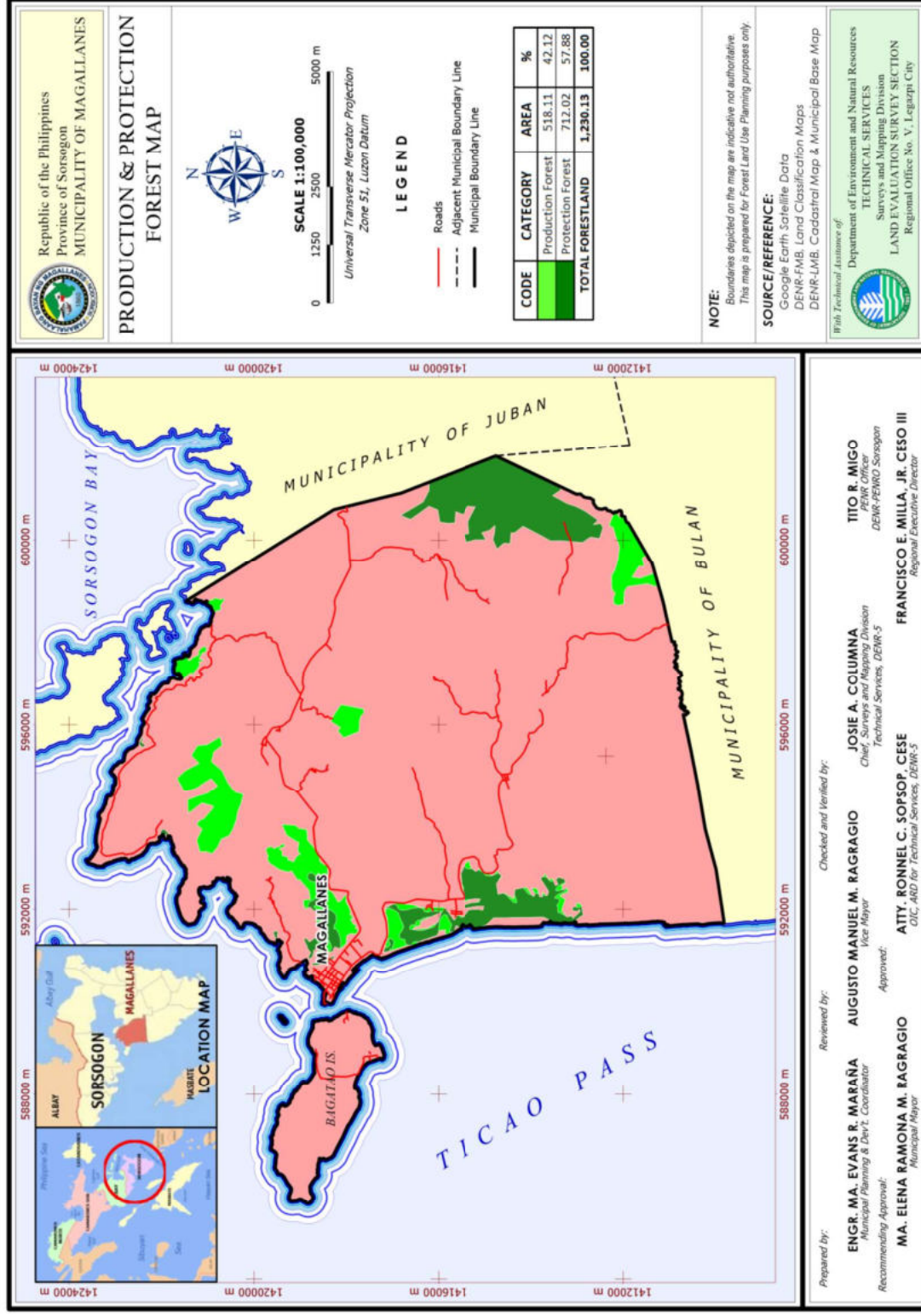
**Checked and Verified by:**  
**JOSIE A. COLUMNA**  
Chief, Surveys and Mapping Division  
Technical Services, DENR-S

**Approved:**  
**ATTY. RONNEL C. SOPSOP, CESE**  
DTC, AND for Technical Services, DENR-S

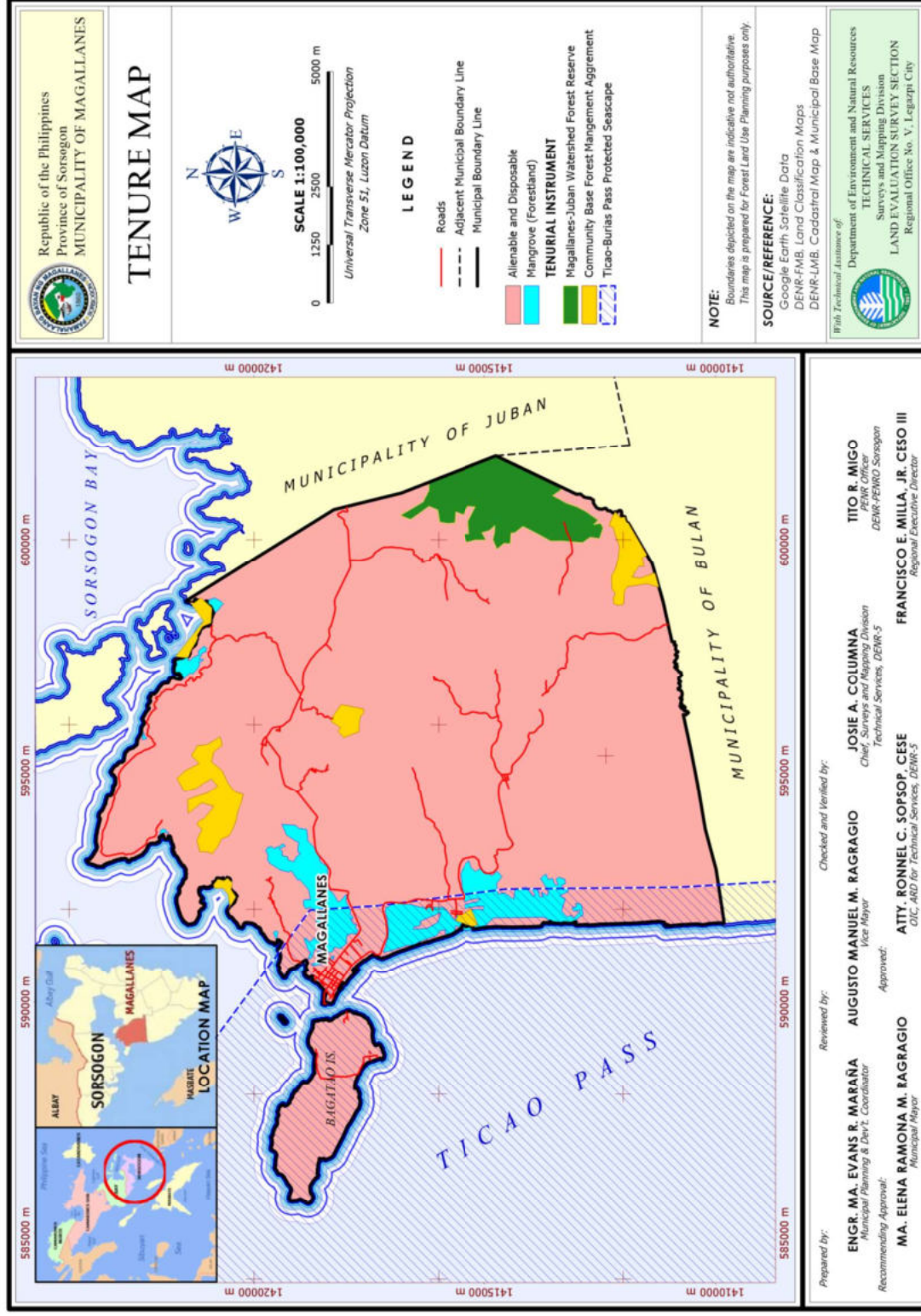
**Regional Executive Director**  
**FRANCISCO E. MILLA, JR. CISO III**



Map 18. Protection and Production Forest Map



Map 19. Tenure Map





#### 5.4.4 Current and Proposed Public Investment

**GMA Relay Station.** One of the existing infrastructures found within the Protected Area of JMWFR is the VHF Television Relay Station of GMA Network Inc. which was constructed by Power Compact Enterprises in year 2012 particularly located at the summit of the Protected Area, occupying a portion of sixty (60) square meters. Said infrastructure is described as a 20-meter high self-supporting tower on top of a two (2) story building and perimeter fence made with cyclone wire with concrete post to protect it from unauthorized entry and vandalism of the site for its operation.

Conversely, a Memorandum of Agreement (MOA) was entered into between the Protected Area Management Board of JMWFR and GMA Network Inc. on November 20, 2012, highlighting that the latter shall pay an amount of Seventy-Two Thousand Pesos (Php72,000.00) per annum representing payment of user fee to the PAMB and an additional five percent (5%) escalation per annum will take place effective on the second year and every year thereafter of operation. Said Relay Station serves as the only source of Integrated Protected Area Fund (IPAF) for the management, protection and development of JMWFR. In 2017, the GMA Network Inc. constructed a steel stair measuring an approximate of five (5) meters, adding to the previous infrastructure they built within the PA.

**National Greening Program (NGP).** In 2011, President Benigno S. Aquino III issued Executive Order (EO) No. 26 declaring the implementation of the National Greening Program (NGP). The NGP was executed by the Department of Environment and Natural Resources (DENR) in collaboration with all government agencies, local government units (LGUs), people's organizations (POs), nongovernment organizations (NGOs), and in partnership with the private sector and civil society. Said program was implemented in pursuit of sustainable development for poverty reduction, food security, biodiversity conservation, environmental stability, and climate change mitigation and adaptation.

In line with the mandate, the Province of Sorsogon was able to reforest denuded forest areas, timberlands, including of which is the Juban-Magallanes Watershed Forest Reserve (JMWFR). A total area of eight hundred twenty-three (823.0) hectares of public land was reforested through the implementation NGP Projects within the Protected Area and along with its adjacent areas. A total number of four hundred seventy-four thousand

four hundred (474,400) seedlings of various species, which includes Narra, Banilad, Gmelina, Raintree, Mahogany, Toog, Pili, Rattan and Dao were planted in the area from 2011-2013.

In 2011, 14,000 seedlings of narra and banilad were planted in Barangay Bulala. In 2013, 48,500 and 46,500 seedlings of rattan were planted in Barangay Bulala and Magsaysay, respectively.

Various reforestation projects were already implemented in Juban-Magallanes Watershed Forest Reserve prior to the National Greening Program (NGP) which includes Assisted Natural Regeneration (ANR), Family and Community Approach Contract Reforestation, Upland Development Program (UDP) and National Forestation Program (NFP). Moreover, the Local Government Units of Magallanes also have efforts to protect and conserve the area through tree planting activities and infra support within the Protected Area. There also exists irrigation and drainage facilities constructed by National Irrigation Administration, like check dams, riprap and drainage canals.

#### 5.4.5 Biodiversity Resources

**Flora.** The forest ecosystem of JMWFR is further classified into (a) primary forest; (b) secondary forest; (c) dipterocarp forest; and (d) forest plantations. The primary forest is described as fairly tall trees of large diameter, low undergrowth species and a diversified species composition. This type of forest consisting Dipterocarp, hardwood, ferns, molave type, Ficus species, and palm species are found dominant in this area of the PA. The watershed area harbors favorable number of forest tree species which includes hardwood species and some volant mammals. The occurrence of Philippine Brown Deer and Philippine Warty Pig are strong indicators that the area is still thickly vegetated.

A total number of 136 flora species were recorded during the conduct of Protected Area Suitability Assessment (PASA) at JMWFR, 39 or 28% were identified to be endemic in the Philippines.

The conservation status of flora species found within the Protected Area showed that five (5) were identified to be critically endangered, 10 were identified to be endangered, 18 species were categorized as vulnerable, 12 were categorized as other threatened



species, 32 of which are identified to be least concern and 60 species comprising 44% of all flora recorded are not yet categorized.

Majority of the flora species found in JMWFR belong to the family of Dipterocarpaceae and Moraceae with a frequency of eleven (11) respectively. Plants of Dipterocarpaceae are of great value for resins and timber, oils, camphor and turpentine, while Moraceae often called the mulberry family are identified to be a family of flowering plants. It was followed by the family of Myrtaceae and Euphorbiaceae with a frequency of ten (10) respectively. Species of the myrtle family provide many valuable products, including timber, essential oils, and horticultural plants, while Euphorbiaceae are mostly monoecious herbs, shrubs, and trees, sometimes succulent and cactus-like, comprising one of the largest families of plants. Moreover, Fabaceae and Lauraceae ranked third among the families of flora species in JMWFR with a frequency of six (6) respectively. Fabaceae are plants of the pea family, ranked as the third largest family among the angiosperms and is previously known as the Legume Family, while the Lauraceae are nearly all woody trees and shrubs. In addition, five (5) were identified to belong in Anacardiaceae family, also called the the cashew family which are being cultivated throughout the world for their edible fruits and seeds, medicinal compounds, valuable timber, and landscape appeal. Lastly, both Guttiferae and Meliaceae have a frequency of four (4) respectively. Guttiferae are family of widely distributed chiefly tropical trees and shrubs (order Parietales) usually having opposite or whorled leaves, unisexual flowers, resinous sap, and oil glands, while Meliaceae also called Mahogany family is not of great economic importance.

**Fauna.** Overall PASA results showed that a total number of 95 fauna species were recorded within the JMWFR, 28 or 30% were Philippine endemic. Recorded fauna was categorized according to their class. Fifty-one (51) or 54% were identified to be Avifauna comprising almost half of the wildlife recorded within the PA, nine (9) or 10% mammals, eight (8) shells, seven (7) insects, seven (7) serpents, five (5) bees, four (4) reptiles, three (3) amphibians and one (1) annelid.

Conservation status of fauna showed that three (3) species are critically endangered, 10 were found to be endangered, five (5) were vulnerable, five (5) were other threatened species, 12 were identified to be not threatened, 29 were least concern and 28 has to available data.

The breeding or nesting of avifauna species were identified by the respondents in trees along the riparian zones and for the non-volant mammals in the vegetated areas of the Protected Area that sometimes could be observed in the open areas. These wildlife species are experiencing population loss and are close to extinction as a result of the destruction of their habitats brought about by increased human activities. Poor implementation of existing forestry laws and uniformed communities around it also contribute to the present condition of the Protected Area.

#### **5.4.6 Nature-Based Tourism Assets**

Magallanes had identified five (5) natural tourism destinations which includes Bucal-Bucalan Spring, Parola Beach Resort, Tinacos Islet, Tula-Tula Sur Falls and Malihao Spring. Bucal-Bucalan Spring located in Barangay Aguada Norte which was developed through PAMANA Project gathers most of the visitors especially during months of March to May. This is also the only government managed tourism site that generates revenue which in year 2012 amounted to 487,745.00 pesos.

Parola Beach Resort situated in Barangay Behia was also developed under PAMANA Project and is still accessible to the public for free in year 2012 to 2013, but starting 2014, cottage fee of P 150.00 is being collected from the visitors. Tinacos Islet on the other hand is accessible for free with at most 50 visitors in a year; this site needs more improvement to become more attractive to the tourist.

Tula-Tula Sur Falls in Barangay Tula-Tula Sur is also a government owned site managed by the Barangay Local Government Unit. This site is accessible for free through a tricycle or jeepney ride. Malihao Spring located in Barangay Bacalon is owned and managed by a private individual who collects affordable fees for entrance and cottage.

The JMWFR is also a potential ecotourism site in the municipality due to its qualities as a wilderness of great natural beauty, pristine environment, crystal clear waters and various wildlife species that are so inviting.



## 5.5 Key Stakeholders

Stakeholders as identified in this plan are those who will be directly and indirectly affected - either negatively or positively. Those who will be directly affected are the inhabitants within the forestland, hazard prone areas and informal settlers.

During the workshop, the participants identified an on-site and off-site stakeholder. On-site stakeholders include Stag North Vegetable Farmers, BFARMC, Talabahan Organization, Parina Fishpond Association, Bata Pa Organization, Rice Farmers Association, Upland Farmers Association, Irrigators Association, and Water Users.

Off-site stakeholders includes the Provincial Government of Sorsogon in the implementation of its 7K Agenda, Department of Agriculture (DA), Department of Environment and Natural Resources (DENR), Department of Social Welfare and Development (DSWD), Philippine Coconut Authority (PCA), Department of Labor and Employment (DOLE), Technical Education and Skills Development Authority (TESDA), and National Irrigation Authority (NIA).

**Lowland Farmers.** Farmers in lowland barangays such as vegetable farmers, root crop farmers and rice farmers are the main beneficiaries of water flowing from the watershed, usually for irrigation and other agricultural purposes.

**Upland Farmers.** The forestlands in the watershed are ideally used by farmers to till and cultivate as agricultural land.

**Community Residents.** The main use of water for community residents is for domestic activities supplied by Magallanes Waterworks System and various Barangay Waterworks Systems. Water supply is also used for recreational activities in the case of Bucalbucalan and Malihao Spring Resort.

**Fisher Folks and Coastal Communities.** These stakeholder benefit from fishing activities both in the municipal waters and different inland waters in the municipality.

**LGU.** The Local Government Unit of Magallanes is an active partner of DENR in the implementation of reforestation projects. There is a regular tree planting activity aside from those tree planting activities scheduled during special occasion. For the year 2022, 4,500

seedlings of fruit trees and forest trees were planted in different forestlands in addition to mangroves and beach forest trees planted in different coastal barangays. The LGU also maintains two (2) municipal nurseries and assist in the maintenance of 18 barangays nurseries.

**DENR.** The Department of Environment and Natural Resources through the Provincial Environment and Natural Resources Office implements the mandated forestry plans and programs.

**DA.** The Department of Agriculture is mandated to promote agricultural development through different frameworks, public investments and support services.

**PCA.** The Philippine Coconut Authority assures that coconut farmers are direct participants and beneficiaries in the promotion of coconut growing and other coconut related industry.

**NIA.** The National Irrigation Administration investigates, study and develop all available water resources in the municipality primarily for irrigation purposes.

**DSWD and TESDA.** The Department of Social Welfare and Development implements social services to reduce poverty among vulnerable sectors with the aid of Technical Education and Skills Development Authority which offers trainings and skills development activities to increase livelihood opportunity and improve life condition.

## 5.6 Institutional Assessment

The key players in the implementation of Forest Land Use Plan and other environmental programs, projects and activities are the DENR and LGU. Through their mandates, human resource component, organizational framework, budget allocation, plans and programs as well as equipment, the protection and conservation of natural resources are being strengthened.

Through the technical assistance of DENR, the data gathering and validation until finalization this FLUP was completed.

The partnership of the two agencies was fortified by virtue of DENR-DILG Joint Memorandum Circular No. 98-01 (Manual of Procedures for DENR-DILG-LGU Partnership on Devolved and Other Forest Management Functions) and the DBM-DILG Joint Memorandum Circular No.



2021-1, Guidelines on the Preparation of Devolution Transition Plans of Local Government Units in Support to Full Devolution under Executive Order No. 138, dated June 1, 2021.

For LGU Magallanes, the following programs have been included in the Devolution Transition Plan:

1. Natural Resources Management – Mangrove Rehabilitation, Upland Reforestation, Coastal Management, Formulation and Implementation of Water Quality Management Plan, Water Quality Protection and Rehabilitation, Pollution Prevention, Air Quality Planning and Monitoring, Implementation of Air Quality Standards
2. Solid Waste Management – Development of Eco-Park with alternative disposal facility.

## **5.7 Summary of Key Problems, Issues, Needs and Opportunities**

Based from the workshop conducted on September 28 – 30, 2022 the following are the key issues and problems related to forest and forest land in the municipality of Magallanes:

### **Forest**

For key problems and issues in forest areas, declining upland forest cover is observed. This is the result of illegal cutting of trees used for charcoal making. Since, upland communities have limited source of living, charcoal making is sometimes an option. Mangrove forest are also declining due to illegal cutting and as a result, marine habitat is being compromised.

### **Agriculture**

The farmers are experiencing low crop production which is due to declined soil fertility and presence of pests in farm lands. In addition, due maybe to some other factors, the price of copra and other agricultural produce is very low. Although in the past, the LGU have implemented farm to market road projects funded from national government agencies such as DILG and DPWH, there are still areas that have no farm to market road. Furthermore, lowland farmers are concerned with the absence of irrigation canal and declined supply of water for irrigation.

### **Fisheries**

Illegal fishing activities are present in some areas of the municipality which resulted to degradation of corals and other fish habitat. In addition, expansion of fish pond. The participants have also included the prevalence of red tide especially in coastal areas located in the Sorsogon Bay.

### **Water Sources**

Over the past years, water sources have declined that led to insufficient water supply in some areas of the municipality both for drinking and domestic uses.

### **Hazard Prone Areas**

The municipality has areas prone to flooding, storm surge, and landslide brought about by heavy rain or typhoon. Also, volcanic ashes reached some barangays whenever Bulusan Volcano erupted.

### **Solid Waste Management**

Since the municipal garbage collector is not able to reach all barangays, improper solid waste management was observed by the stakeholders.

### **Other Problems and Issues**

Other identified problems and issues are the presence of quarrying in some areas and siltation of river. Due to some human activities such as agriculture and construction many additional tons of silt find our rivers and other bodies of water.



With the presence of many pressing forest and forest land use issues including all other environmental concerns the following are the needs to be met:

To establish and institutionalize the programs, projects and activities in support to the issues on forest and forest land use and other environmental concerns, there is a need to reactivate the BFARMC and other people's organization in the upland forest area and regular conduct of IEC on proper solid waste management, forest and forestland management related laws, rules and regulations.

To strengthen policies on this matter, there is a need to formulate environmental code, strict enforcement and implementation of national laws and formulate and enforce ordinance regulating the cutting of mangroves and prohibiting quarrying activities. Barangay ordinance for establishment of sanctuaries/fish attractions and ordinance adopting national laws on forest and forestland management will also be formulated.

To avoid exploitation of both forest and marine resources, provision of alternative livelihood opportunities to farmers and fisher folks will be helpful. Mangrove reforestation by BLGU, MLGU, Private Groups, PENRO is also needed.

There is also a need to strengthen solid waste management through provision of sufficient and appropriate facilities. Lastly, to mitigate the effects of climate change and prevent damages of natural hazards, there is a need to stabilize the river banks and further intensify tree planting activities and agro-forestry.

The opportunities identified during the workshop is the conservation areas for both forest and marine biodiversity, reforestation activities and watershed management in partnership with national government agencies and the potential of Magallanes for ecotourism destination.

## 6.0 RECOMMENDED STRATEGIES

Based on the key findings and the major issues and problems identified, the following are the recommended strategies:

### 6.1 General Strategies

- Although the protection and conservation of portions of sub-watersheds in the municipality which is covered by JMWFR is the concern of the DENR, the LGU will take part in the through on-site monitoring of the area. On the other hand, sub-watersheds outside the JMWFR are the under the responsibility of the LGU. In partnership with PENRO, the LGU will create a plan for the effective management of other sub-watersheds.
- Ensure sufficient funding for the implementation of plans for the proper management of FFL through local budget and funding from other national government agencies.
- Provide guidelines in the zoning and management of forest lands to ensure effective and efficient management of FFL through proper legislation. Protection and production zones shall be specified based on national policies and agreed objectives of the municipality's forest lands. Buffer zones should also be established in order to ensure that protected areas will have better protection from unnecessary human activities that may harm these areas. Conduct study on the possible expansion of fish sanctuary in Behia and Tagas

### 6.2 Specific Technical Strategies

#### Sub-Watersheds

For sub-watershed 5 – Incarizan River Sub-Watershed the specific technical strategies would be the rehabilitation of mangrove areas in Incarizan River, planting of Chinese bamboo, nipa, manuping and bakawan along the river. In the past years, mangrove trees in this area have depleted due to some infrastructure improvements and human habitation. This sub-watershed is also prone to storm surges that's why aside from mangrove as natural barriers, riverbank protection will also be constructed. In addition, all fishpond lease agreement or FLA holder will be required to plant mangrove or bakawan through a resolution. It is also important to have a data base on the number and species of mangrove present, that is a way a profiling activity will



also be implemented. And lastly, the feasibility of a mangrove tourism will be studied and promoted.

For Bagatao Island sub-watershed, Bagatao Island will be continuously improved and promoted as an ecotourism area. Planting of shrubs or small trees that are friendly to the wildlife such as Balitbitan will be implemented. Furthermore, Barangay Biga has a potential source of potable water and it is planned to be developed as part of the FLUP.

For the sub-watersheds located in the upland areas, the strategies would be to identify and organize or re-organize People's Organization present. Promote Abaca and rain forestation as buffer between open and closed forest – for protection and production or multiple uses. Even if it is a buffer zone, activities should not affect the watershed. In addition, the Executive Order on tree replacement will be strictly implemented in order to regulate cutting of trees and replace the trees being cut. Another beneficial strategy is the restoration of trees through planting of native or indigenous trees. In this way, existing wildlife will be maintained and other flora and fauna will be able to thrive or return in the ecosystem present in the watershed. Moreover, portion of the JMWFR is located in Barangay Bulala, thus it is a strategic location to establish an arboretum and wildlife park. It will also be designated as seed production area within the A & D in JMWFR together with Barangay Magsaysay.

#### **CBFMA**

For Community-Based Forest Management Area or CBFMA, the first strategy is to conduct an organizational diagnosis in Barangays Bulala, Tula-Tula Sur, and Magsaysay. After which, the people's organization present will be reorganized or reactivated. A Resource Use Plan will be prepared to serve as guide in the rehabilitation and management of the area as well as to identify existing tree species. Since information on forest and forest land use of Magallanes is limited, a study to establish baseline data pertaining the wildlife species present in the FFL will be conducted. And for monitoring purposes, an area that will be regularly visited will be set and check for species with ecological significance, has reason for conservation and can be declared as critical habitat.

## **River Banks**

In order to protect the river banks from further erosion, a riverbank stabilization and restoration will be implemented. Bamboo of different species will be planted along river banks to mitigate heavy flooding. In addition, 20 meters easement outside the protected area will be strictly implemented so as to avoid flooding and further intrusion of human habitation. And lastly, a mixed of natural mitigation and use of infrastructure also called as green engineering will be promoted so as to have a variety of mitigation approaches.

## **Potential Water Source**

The municipality has many potential sources of water especially in Barangay Sta. Elena; thus, an assessment will be conducted to delineate the boundaries of the proposed community watershed for protection and development. Furthermore, water sources in Barangays Sta. Elena, Caditaan, Salvacion, Siuton and Malbog will be developed.

## **Institutional Strategies**

In order to strengthen management of forest and forest land use, partnership with all relevant government agencies will be established. The LGU will also ensure that plans are consistent with the zoning ordinance and allocation. With regards to JMWFR, negotiation with neighboring municipalities will be beneficial for more protection and management plan must be revisited for a more holistic management involving three municipalities. An Executive Order will be issued to further reinforce the Mangrove Reforestation Program. In addition, massive awareness raising and promotional activities along watershed and biodiversity conservation, protection and management for children and youths by tapping the academe, Sangguniang Kabataan (SK), youth-serving and youth-related organizations, NGOs, etc. and IEC materials development and dissemination will be conducted. And lastly, an ordinance on FLUP will be formulated and implemented particularly the zoning and management strategies consistent with national policies.



### **Support to Institutions**

At present, the Municipal Environment and Natural Resources Office (MENRO) and Tourism Office are still designated positions, that's why another strategy to support the implementation of FLUP is to establish the abovementioned offices and provide adequate funds and recommended personnel and staff.

### **Poverty Alleviation/Socio-Economic Approach**

In order for the stakeholders to have ownership on the management of FFL, a family-based approach as Bantay Kalikasan which will monitor and report all illegal environmental activities will be organized.

### **Solid Waste Management**

The LGUs Solid Waste Management Plan is already approved and the MENRO is in charge of implementing the programs, projects and activities stated in the plan. The open dumpsite was already closed and the LGU has an agreement with private service provider as the final disposal of the LGUs solid waste. The closed dumpsite will be developed into an Eco-Park.

### **Approach to CCA**

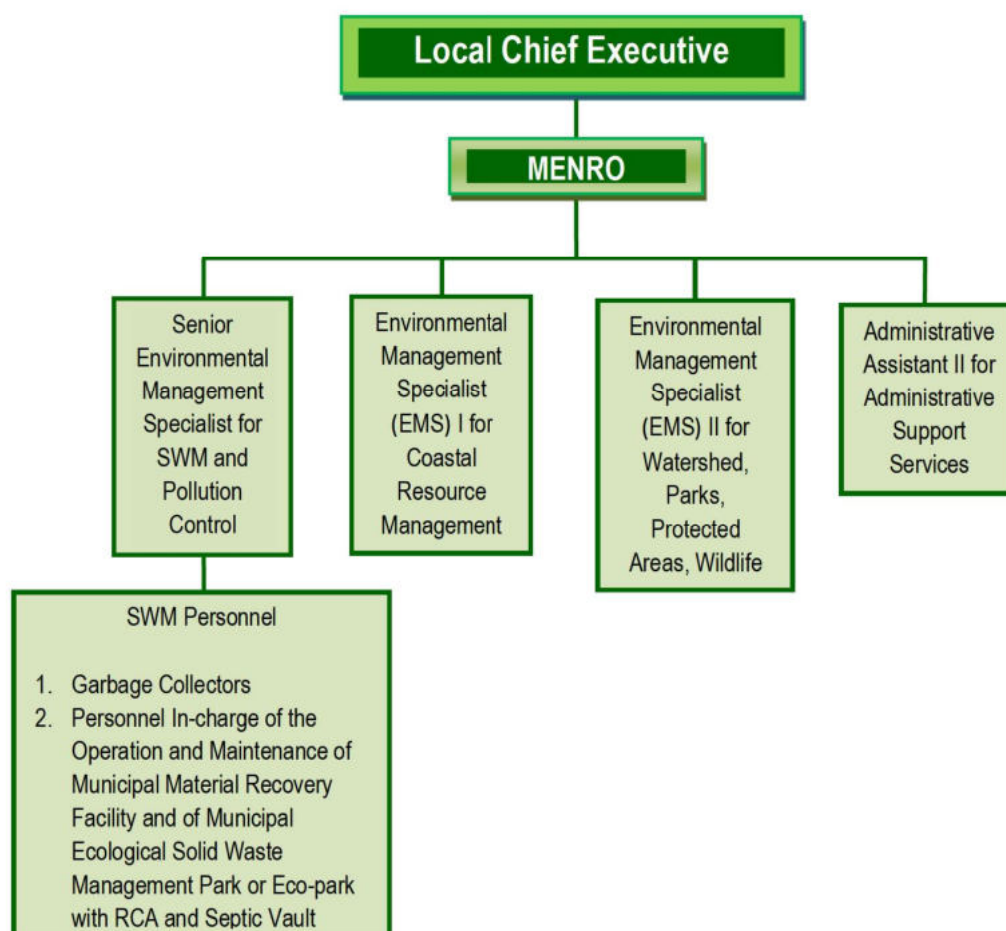
To strengthen the LGUs adaptation to climate change, the strategies will be to enforce a no build zone in areas with high susceptibility to flooding, landslide and storm surge. River bank stabilization, flood controls and slope protection for landslide and flood prone areas will be constructed. In addition, indigenous or native trees for carbon sequestration will be planted. Informal settlers and inhabitants in hazard prone areas and easements will be relocated to safer areas and continuous capability building on Community-Based Disaster Risk Reduction Management (CBDRRM) will be implemented.

## 7.0 ORGANIZATIONAL STRUCTURE AND OPERATIONS IN SUPPORT TO FLUP IMPLEMENTATION

### 7.1 Creation and Strengthening of the Municipal Environment and Natural Resources Office (MENRO)

For effective, efficient and sustainable implementation of this plan, it is recommended that the physical structure of the Office of the Municipal Environment and Natural Resources should be established. This includes the permanent appointment of a MENR Officer and other personnel; and the setting up of an office equipped with facilities and equipment. Hereunder is the proposed organizational composition of the MENRO.

**Figure 5. Organizational Structure of Proposed Establishment of MENR Office**





The General Functions of the proposed Office of the Municipal Environment and Natural Resources (MENRO) are as follows; viz:

1. Implement/enforce national laws and local ordinances regulating the emission/ discharge of harmful substances to the atmosphere, and water systems, solid waste management policies and directives, and recommend for the apprehension of violators and abatement of the pollution;
2. Manage the ecological and natural resources of the municipality, primarily promoting sustainability of local resources, such as but not limited to forests, watersheds, rivers, coasts and fishing grounds;
3. Implement programs for the protection and preservation of the environment, as well as rehabilitation of areas critically affected by industries, effects of natural calamities, result of man-made activities, etc.;
4. Provide technical assistance to the Local Chief Executive and the Legislative branch on policy and decision-making;
5. Conduct continuing education for the municipality's constituents stressing on environmental stewardship, awareness and responsibility;
6. Gather and maintain records of environmental data, activities, assets and compliments and evaluate the state of environment of the Municipality;
7. Coordinate environmental activities within the territorial jurisdiction of the municipality and integrate it with the environmental master plan;
8. Facilitate capacity building for local adaptation planning, implementation and monitoring of climate change initiatives in vulnerable communities and areas;
9. Recommend key development investments in climate- sensitive sectors such as water resources, agriculture, forestry, coastal and marine resources, health, and infrastructure to ensure the achievement of local sustainable development goals.

For the establishment of MENRO, there is a need for the creation of various plantilla positions as presented in below. Since there is already an existing EMS II, only the following position titles will be created in conformity with the qualification standards set by the Civil Service Commission and its index of Occupational Services, Position Titles and Salary Grade for LGUs.

<u>TITLE OF POSITION</u>		<u>SALARY GRADE</u>
One (1)	Environment Management Officer	24
One (1)	Senior Environmental Management Specialist for Solid Waste Management and Pollution Control	18
One (1)	Environmental Management Specialist I for Coastal Resource Management	11
One (1)	Administrative Assistant II for Administrative Support Services	8

The personnel to be filled in the existing Environmental Management Specialist II, on the other hand, will focus on the Watershed, Parks, Protected Areas, Wildlife and Forestry.

Meanwhile, listed below are the corresponding duties and responsibilities of each personnel who will comprise the Office of MENRO:

**Senior Environmental Management Specialist for  
Solid Waste Management/Pollution Control**

1. Establish and manage a comprehensive solid and liquid waste management information data base and dissemination system;
2. In collaboration with technically responsible government and private agencies relative to solid and liquid waste generation and management access techniques as well as the management, technical and operational approaches to resource recovery;
3. In collaboration with processors/recyclers, access the list of materials being recycled or bought by them and their respective prices; and
4. In coordination with the National Government Agencies and other technically responsible government and private agencies, access information on cleaner production/cleaner technologies that promote efficient solid and liquid waste management.
5. Promote the development of a recycling market through the establishment of a recycling network that will enhance the opportunity of recycling;
6. Act as the hub for networking of other local government units and barangays (especially within the province), non-government organizations and industry on voluntary compliance of the pertinent provisions of solid and liquid waste management act and clean air act as well as this ordinance;



7. Provide, facilitate technical assistance in pilot modeling of solid and liquid waste management facilities including technologies and techniques for effective solid waste management;
8. Develop, test and disseminate model waste minimization, emission control and reduction auditing procedures for evaluation options;
9. Recommend policies to eliminate barriers to waste reduction programs; and
10. Maintain service and operate the Municipal Ecological Solid Waste Management Park or Eco-park with MRF, processing and working area, recycling facility, vermi-composting facility, green house garden or plant nursery, residual containment area (RCA), and septic vaults and all other facilities and equipment within it.

**Environmental Management Specialist II for  
Watershed, Parks, Protected Areas, Wildlife & Forestry**

1. Implementation of community based forestry projects, such as integrated social forestry, establishment of new regular reforestation projects, except to those located in protected areas and critical watersheds, completed family and community based contract reforestation projects, subject to policies and procedures prescribed by the DENR, Forest Land Management Agreements, in accordance with DAO No. 71, Series of 1990 and other guidelines that the DENR may adopt and Community Forestry Projects, subject to concurrence of financing institutions, if foreign assisted, pursuant to Section 3.1 (a) of DAO 30, Series of 1992;
2. Establishment and maintenance of the municipality's tree parks and other tourist attractions through beautification projects, except those in protected areas and the collection of fees for their services and the use of facilities established therein, pursuant to Section 3.2 (a) of DAO 30, Series of 1992;
3. Except import and export, regulation of flora outside protected areas, including industries and business engaged in their propagation and development, such as orchidaria and nurseries;
4. Implementation and rehabilitation in conservation hotspots and the conservation of rare and endangered species activities, in areas identified and delineated by the DENR, pursuant to Section 3.2 (a) of DAO 30, Series of 1992;
5. Implement plans and programs for the protection and preservation of natural resources, rehabilitation of beauty of natural spots and maintain ecological balance of the man and his surroundings;
6. Ensure optimization as well as promote conservation in the use and utilization of all natural resources found within the territorial limits of the municipality through education and training of

- the citizens for the preservation and protection of the natural beauty of the environment and the resources it provides; and perform other duties that may be assigned by law ordinance; and
7. Maintain, or whenever applicable restore the beauty of nature spots within the territorial jurisdiction of the municipality through the conduct of regular survey and inventory on the flora and fauna found within the boundaries of the municipality and make the same available to the public.

**Environmental Management Specialist I for**  
**Coastal Resource Management Division**

1. Implementation of community based marine protected area, marine sanctuary and mangrove forest reserves within the territorial jurisdiction of the municipality;
2. Enforcement of fishery laws in municipal waters, both national and locally promulgated, including the conservation of mangroves, extension and on-site research services and facilities related to fishery activities
3. Regulation of coastal/marine tourism facilities and other marine/coastal tourist attraction, including the acquisition of equipment, regulation and supervision of business concessions and security services for such facilities, pursuant to Section 17 (b)(2)(xi) of RA 7160 and DENR Administrative Order No. 30, Series of 1992; and
4. Enforcement of community-based mangrove reforestation and other laws relative to its protection, pursuant to Section 17 (b)(c)(iii) of RA 7160.

**Administrative Assistant II for**  
**Administrative Support Services**

1. Maintain records of personnel, including but not limited to Personnel Data Sheet (PDS), OPCR and IPCR, Daily Time Record (DTR), Leave of Absence, etc.
2. Prepare necessary documents for the procurement of supplies and equipment, as well as maintain records and inventory of supplies and equipment according to government standards and forms;
3. Facilitate internal and external communications and maintain a centralized record management system for the department;
4. Facilitate official transactions for department personnel, including following up of procurement documents, payments/ reimbursements and such other documents relative to the function of the office; and



5. Prepare financial and administrative plans for the department as well as annual financial and administrative reports.

The Municipal Environment and Natural Resources Officer (MENRO) to be appointed; contrariwise, should be a citizen of the Philippines, of good moral character, a holder of a college degree preferably in environment, forestry, agriculture or any related course from a recognized college or university, and a first-grade civil service eligible or its equivalent. He/She must have acquired experience in environmental and natural resources management, conservation, and utilization, of at least five (5) years.

The MENRO will take charge of the Municipal Environment and Natural Resources Office and will perform the following duties and responsibilities:

1. Formulate measures for the consideration of the Sanggunian and provide technical assistance and support to the LCE, in carrying out measures to ensure the delivery of basic services and provision of adequate facilities relative to environment and natural resources services as provided for under Section 17 of R.A. No. 7160;
2. Develop plans and strategies and upon approval thereof by the LCE, as the case may be, implement the same, particularly those which have to do with climate change adaptation strategies and environmental programs which the LCE is empowered to implement and which the Sanggunian is empowered to provide for under R.A. No. 7160;
3. Establish, maintain, protect and preserve communal forests, watersheds, tree parks, mangroves, and similar forest projects;
4. Provide extension services to beneficiaries of forest development projects and technical, financial and infrastructure assistance;
5. Manage and maintain seed banks and produce seedlings for forests and tree parks;
6. Provide extension services to beneficiaries of forest development projects and render assistance for natural resources-related conservation and utilization activities consistent with ecological balance;
7. Coordinate with government agencies and non- governmental organizations in the implementation of measures to prevent and control land, air and water pollution with the assistance of the Department of Environment and Natural Resources and the Environment Management Bureau;
8. Be in the frontline of the delivery of services concerning the environment and natural resources, particularly in the renewal and rehabilitation of the environment during and in the aftermath of

man-made and natural calamities and disasters due to global warming as to the effect of climate change;

9. Recommend to the Sanggunian and advise the LCE, on all matters relative to the protection, conservation, maximum utilization, application of appropriate technology and other matters related to the environment and natural resources; and
10. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

Moreover, while the creation of the MENRO will still be in the process, a Functional Chart of all technical working groups (TWGs) is hereby designed to ensure that this plan will start its implementation as soon as been approved.

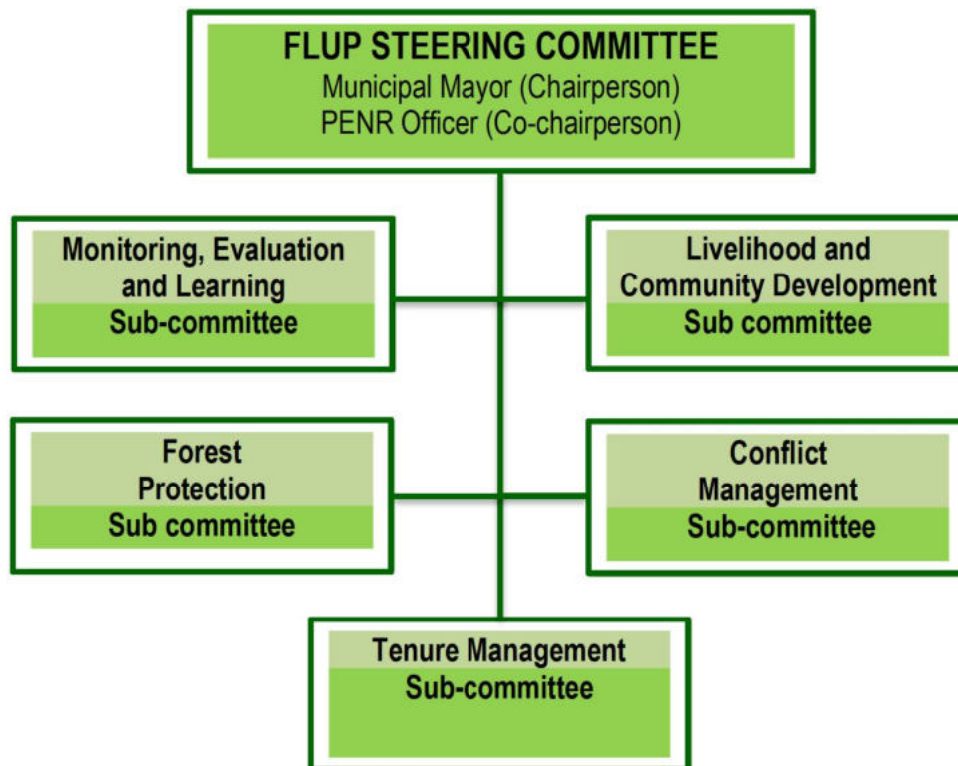
## **7.2 Forging Partnership Agreements**

The FLUP Steering Committee will be composed of an Executive Committee and Sub-Committees. The Municipal Mayor will lead the Executive Committee together with the Provincial Environment and Natural Resources Officer (PENRO) as co-chairperson. Members are the SB-Chairperson on Environment, Municipal Environment and Natural Resources Officer (MENRO), Municipal Planning and Development Coordinator (MPDC), Municipal Agriculture Officer (MAO), People's Organization (PO) representative, Civil Society Organization (CSO) representative, Non-government Organization (NGO) representative, representative from the academe and MLGOO.

There will be five (5) Sub-Committees namely: (a) Monitoring, Evaluation and Learning Sub-Committee, (b) Livelihood and Community Development Sub-Committee, (c) Forest Protection Sub-Committee, (d) Tenure Management Sub-Committee, and (e) Conflict Management Sub-Committee.



**Figure 6. Structure and Sub-committees of the FLUP Steering Committee**



The Monitoring, Evaluation and Learning Sub-Committee will ensure efficient implementation of FLUP Plan and schedule reviews and assessment of FLUP outcomes. It will be responsible for formulating M&E Plan in order to track progress of the programs/projects recommended in this plan. It is headed by the MENRO with the MAO, MPDO, PENRO, academe and LGU-Barangay Committee Chairperson on Environment.

The Livelihood and Community Development Sub-Committee headed by the Municipal Agriculture Office (MAO) and representatives from the PENR Office, DSWD, DTI, TESDA, DOST, MPDO, MLGOO, Gender focal Person as members. Its task is to provide necessary assistance to forest communities earn income and savings through optimal utilization of natural resources.

The Forest Protection Sub-Committee will be tasked to come up with solutions to issues related to enforcement of forest laws, rules and regulations. It will also be the sub-committee's responsibility to ensure that said laws, rules and regulations are actually enforced. It is headed by the DENR-MENRO and PENRO with members from PO, CSO, NGO, PNP, AFP, and Punong Barangays.

The Tenure Management Sub-Committee headed by MENRO and deployed DENR V staff, representatives from the DENR-PENRO, PO, CSO, and NGO as members. The Sub-Committee will ensure that forest lands under the jurisdiction of tenure/allocation holders are effectively managed.

Headed by the MENRO with the MLGOO, representatives from DENR V, PO, CSO, NGO, PNP, and AFP as members, the Conflict Management Sub-Committee's task is to undertake strategies along conflicts negotiation and resolution related to management of forest lands.

While the MENR Office is not yet institutionalized, the MENR Officer is being designated in the person of Ms. Eden L. Ariate. She will be the one to discharge the duties and functions of the MENRO as stated in this plan and consistent with relevant laws and guidelines while there is still no permanent personnel appointed for the position.



## 8.0 ESTIMATED FINANCIAL REQUIREMENTS IN THE IMPLEMENTATION OF FLUP AND SOURCES OF FUND

Creation and strengthening of the Municipal Environment and Natural Resources Office (MENRO) through provision of adequate funds and recommended personnel and staff requires the following:

**Table 18. Budgetary Requirements for the Establishment of MENR Office**

Budget Details	Year 1	Year 2	Year 3	Year 4	Year 5
Personnel Expenses	3,420,604.00	3,420,604.00	2,844,848.00	2,999,848.00	3,343,938.00
Maintenance and Other Operating Expenses (MOOE)	1,130,000.00	1,130,000.00	675,000.00	730,000.00	930,000.00
Establishment of MENRO Office with permanent personnel and adequate equipment and supplies	4,784,504	4,784,504	2,844,848	2,999,848	3,343,938
CDF/CO	5,655,000.00	4,345,000.00	3,855,000.00	1,705,000.00	3,915,000.00
<b>TOTAL</b>	<b>14,990,108.00</b>	<b>13,680,108.00</b>	<b>10,384,544.00</b>	<b>8,259,696.00</b>	<b>11,323,028.00</b>

**Table 19. Five (5) – Year Management Plan**

No.	P/P/As	Responsible Agency	Funding (,000.00)					Fund Source
			2023	2024	2025	2026	2027	
1	Profiling of mangrove areas	LGU, PENRO, DENR	10	10	10	10	10	NTA
2	Promote mangrove ecotourism	LGU, PENRO, DENR	10	10	10	10	10	NTA
3	Promote Bagatao Island as ecotourism area	LGU, PENRO, DENR, TOURISM OFFICE	10	10	10	10	10	NTA

No.	P/P/As	Responsible Agency	Funding (,000.00)					Fund Source
			2023	2024	2025	2026	2027	
4	Conduct Organizational Diagnosis for CBFMA Barangays – Bulala, Tula-tula Sur, and Magsaysay	LGU, PENRO, DENR	10	10	10	10	10	NTA
5	Identify and organize/Re-organize People's Organization	LGU, PENRO, DENR	10	10	10	10	10	NTA
6	Prepare Resource Use Plan	LGU, PENRO, DENR	10	10	10	10	10	NTA
7	Conduct study to establish baseline data pertaining the wildlife species present in the FFL	LGU, PENRO, DENR	30	30	30	30	30	NTA
8	Set area that will be regularly visited, check for species with ecological significance, has reason for conservation and can be declared as critical habitat	LGU, PENRO, DENR	10	10	10	10	10	NTA
9	Promote Abaca and rain forestation as buffer between open and closed forest – for protection and production or multiple uses.	LGU, PENRO, DENR	10	10	10	10	10	NTA
10	Assess and delineate the boundaries of the proposed community watershed for protection and development in Sta. Elena	LGU, PENRO, DENR	10	10	10	10	10	NTA
11	Establish partnership with all government agencies	LGU	10	10	10	10	10	NTA
12	Ensure that plans are consistent with the zoning ordinance and allocation	LGU, PENRO, DENR	10	10	10	10	10	NTA
13	Negotiate with neighbouring municipalities for more protection within JMWFR	LGU, PENRO, DENR	10	10	10	10	10	NTA
14	Revisit JMWFR management plan for holistic management involving three municipalities	LGU, PENRO, DENR	10	10	10	10	10	NTA



No.	P/P/As	Responsible Agency	Funding (,000.00)					Fund Source
			2023	2024	2025	2026	2027	
15	Massive awareness raising and promotional activities along watershed and biodiversity conservation, protection and management	LGU, PENRO, DENR	10	10	10	10	10	NTA
16	Formulate and issue ordinance implementing the FLUP	LGU, PENRO, DENR	10	10	10	10	10	NTA
17	Planting of mangrove along Incarizan River	LGU, PENRO	100	100	100	100	100	NTA
18	Planting of Chinese bamboo	LGU, PENRO	100	100	100	100	100	NTA
19	Planting of nipa, manuping, bakawan along river	LGU, PENRO	100	100	100	100	100	NTA
20	Planting of endemic trees	LGU, PENRO	100	100	100	100	100	NTA
21	Rehabilitate Community-Based Forest Management Agreement (CBFMA) areas and Identify tree species	LGU, PENRO	100	100	100	100	100	NTA
22	Plant shrubs or small trees that are friendly to the wildlife such as Balitbitan	LGU, PENRO	100	100	100	100	100	NTA
23	Plant bamboo of different species along river banks to mitigate heavy flooding	LGU, PENRO	100	100	100	100	100	NTA
24	Planting of indigenous or native trees for carbon sequestration	LGU, PENRO	100	100	100	100	100	NTA
25	Construction of riverbank protection, stabilization and restoration	LGU, DPWH	10,000	10,000	10,000	10,000	10,000	DPWH
26	Implement Spring development in Biga	LGU	10,000	10,000	10,000	10,000	10,000	DPWH
27	Develop water sources in Sta. Elena, Caditaan, Salvacion, Siuton and Malbog	LGU	50,000	50,000	50,000	50,000	50,000	DPWH
28	Construction of flood controls and slope protection for landslide and flood prone areas	LGU, DPWH	10,000	10,000	10,000	10,000	10,000	DPWH
29	Promote Green Engineering – mixed of natural mitigation and use of infrastructure	LGU, DPWH	10,000	10,000	10,000	10,000	10,000	NTA, DPWH

No.	P/P/As	Responsible Agency	Funding (,000.00)					Fund Source
			2023	2024	2025	2026	2027	
30	Establishment of arboretum and wildlife park in Bulala	LGU, DENR	50,000	50,000	50,000	50,000	50,000	NTA, DENR
31	Establishment of Ecopark	LGU, DENR	20,000	20,000	20,000	20,000	20,000	NTA, DENR
32	Issue an Executive Order on Mangrove Reforestation Program	SB						NTA
33	Organize family-based approach as Bantay Kalikasan	MO	10	10	10	10	10	NTA
34	Require planting of mangrove or bakawan through a resolution to fishpond lease agreement (FLA) holder	SB, MO						NTA
35	Implement Executive Order on tree replacement	MO						NTA
36	Strictly implement 20 meters easement outside the protected area	LGU						NTA
37	No build zone in areas with high susceptibility to flooding	LGU						NTA
38	Relocation of informal settlers and inhabitants in hazard prone areas and easements	LGU, DHSUD, DPWH	20,000	20,000	20,000	20,000	20,000	NTA
39	Continuous capability building on Community-Based Disaster Risk Reduction Management (CBDRRM)	LGU	100	100	100	100	100	NTA

The sources of fund for the implementation of the PPAs under the FLUP are the following:

- National Tax Allocation
- Rentals and local revenues generated
- Grants from national government agencies including DENR counterparts
- Private sector investments and donation



## 9.0 PARTICIPATORY MONITORING, EVALUATION AND LEARNING PROGRAM AND ACTIVITIES

The FLUP Steering Committee has a Sub-Committee on Monitoring, Evaluation and Learning (ME & L). This Sub-Committee will be responsible for developing a Participatory ME&L System Design that is simple and easy to understand and usable by the community based on FLUP goals and objectives. It revolves around a systematic process of continuous action and reflection, and places learning and empowerment at the heart of FLUP implementation process. Monitoring and evaluation indicators shall be developed. ME&L will be participative done with the community for them to develop ownership of the FLUP management process and outcomes.

There will be three components of the ME&L system, these are (a) quarterly monitoring, (b) annual FLUP implementation review and planning and evaluations. At the start of FLUP implementation, a baseline evaluation will be conducted. Then, after two years or 1st quarter of the third year, (c) a mid-term evaluation will be undertaken and a final evaluation before the FLUP implementation commenced. Monitoring will take care of activities, while evaluation takes care of results.

The quarterly monitoring will determine status of FLUP programs/projects/activities implementation; particularly issues, problems and constraints. Results of the quarterly monitoring will be decision tools for the FLUP Steering Committee to come up with appropriate intervention to respond to issues and concerns. The Annual FLUP Implementation Review and Planning will assess the specific outcomes and formulate the following year's activities

The baseline survey will profile the forest and forest lands in terms of the status of natural resources and internal stakeholders. Same data and information will be looked into during the mid-term and final evaluation. Evaluations will determine if management objectives are met through positive changes in the status of natural resources and people.

## REFERENCES

Comprehensive Land Use Plan of Magallanes 2021-2030

Forest Land Use Plan of the Municipality of San Miguel 2021-2025

Forest Land Use Plan of the Municipality of Bulusan 2021-2025

JMWFR Protected Area Suitability Assessment (PASA) CY 2019