Gubat, Sorsogon
Comprehensive Land Use Plan
2021-2029

Volume 1
PHYSICAL AND SOCIO-ECONOMIC PROFILE

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THE COMPREHENSIVE LAND USE PLAN (CLUP) PROCESS

In the Philippines, all local government units (LGUs) are directed to formulate their Comprehensive Land Use Plans (CLUPs) (Quitalig & Orale, 2016) as mandated by the Local Government Code and duly supported by Executive Order 72 and Republic Act 7279 (Urban Development and Housing Act), and other policies to manage and conserve their local resources. In 2014, CLUP guideline was updated to comply with two (2) national landmark laws--RA 10121 Disaster Risk Reduction and Management Act of 2010 and RA 9729 Climate Change Act of 2009 (Velez, 2016).

Like many communities in the country, Gubat is faced with massive urbanization and development. And while its lands remain scarce for its urban center, the competition of mutually-exclusive uses increases. Meanwhile, in rural areas, agricultural lands are threatened by population growth, environmental pollution, effects of climate change, and urbanization. On the remaining land, other users compete to achieve food security, economic growth, tourism, nature conservation, and other objectives. In general, the scarcity of land makes land use planning imperative.

The CLUP is a blueprint for local development. It is an essential tool to find a balance among competing and sometimes contradictory uses (GIZ, 2011). Land use planning is defined as a systematic and iterative procedure carried out to create an enabling environment for sustainable development of land resources, which meets people's needs and demands. It assesses the physical, socio-economic, institutional and legal potentials and constraints on an optimal and sustainable use of land resources, and empowers people to make decisions about how to allocate those resources (FAO & UNEP, 1999) among competing user groups and for different functions (RA 7279, 1992). Further, a CLUP shall delineate actual boundaries on the ground within the territorial jurisdiction, embody the desired land use patterns of the barangay, city or municipality, translate and integrate sectoral plans, and provide appropriate policies for each of the four land use planning categories (HLURB, 2013).

In recent years, the continued impact of extreme weather events attributed to global climate change highlights the critical role of land use planning to address climate change mitigation and adaptation measures by local communities, especially in developing countries. The 2010 World Development Report stated that climate change would affect numerous sectors and productive environments, including agriculture, forestry, energy, and coastal zones, in developed and developing countries (WDR, 2010). Thus, the importance of land use planning as a strategic climate change adaptation tool is clearly stated in the Philippines' National Framework Strategy on Climate Change (NFSCC). Under the NFSCC, the integration of climate change and disaster risk reduction into local land use and development plans, based on an integrated ecosystems approach or 'ridge-to-reef' framework, is considered a major pillar of the country's adaptation plan (Perez & Gotangco, 2013).

CLUP should also link with other plans such as the National Physical Framework Plan (NPFP), DRRM Plan, barangay plan and other specific plans. The Regional Physical Framework Plans (RPFPs), Provincial Development and Physical Framework Plans (PDPFPs) and CLUPs, will cover the development of their respective territories. In turn, they should be consistent with the National Physical Framework Plan (NPFP). All of these plans need to be integrated and harmonized. This is necessary to ensure that the concerns of the top and bottom levels of the government are considered in the plan. The CLUP should be consistent and linked to the different identified national policies and international commitments of the country. This will ensure their complementation in the development, conservation, protection and management of the resources (Velez, 2016).

However, it should be underscored that CLUP should be a participatory process. This means that it should build on a development planning process made by people directly affected by the plan, and those who will implement it also participate in its formulation, lest it can result in a fragmented and multiple sectoral plans. Therefore, if collectively pursued, this process can dramatically change the insight and accuracy of the situational analysis, the practicality of the target results, the acceptability of the methods, and hence the probability of successful implementation (GIZ, 2013).

In order to pursue the crafting of 2019-2029 CLUP, the Municipality of Gubat went through the following steps:

- **Ecological profiling**. It started in 2011 during the CBMS formulation, which underwent many obstacles and then before its final stage, the LGU availed the RCBMS, which was validated in 2017. Outputs of RCBMS provided the information on the Socio-Economic Profile of the LGU. The socio-economic Profile of RCBMS includes ecological profiling.
- **Preparation of sectoral plans**. From July to September 2016, the Municipal Planning and Development Office (MPDO) consolidated the data needed, which was drawn mainly from the ecological-socio-economic profile of RCBMS. Moreover, data collection and analysis from KALAHI-CIDDS was utilized in coming up with clear first hand documents that contain situationer and preliminary SWOT Analysis for the sectors. Moreover, the Barangay Governance Performance Management System (BGPMS) annual report supplied updated data for the analysis.
- **Sectoral planning workshops**. In September 2016, the municipality conducted the synchronized sectoral planning writeshop for three days incorporating the orientation of roles and responsibilities of each sector in the formulation of CLUP. The plan formulation took off from existing plans such as Disaster Management Plan, Gender and Development Plan, Work and Financial Plan for Children, Food Security Plan, and the Peace and Order and Public Safety Plan, among others. The sector participants were drawn from members of five sectoral committees of the Municipal Development Council, augmented by representatives of municipal government departments and offices, concerned national agencies, and additional representatives from NGOs, POs, and CSOs. Using the vision reality gap analysis, the municipal vision was revised.
- **Consolidation of workshop outputs**. In November and December 2016, a series of workshops were conducted to enhance the previous workshop outputs. Moreover, available data was cross-checked with sectoral representatives. The MPDC emphasized the need for truth-telling and encouraged participants for better information and/or data.
- **Consultation with HLURB**. In February 2017, the Office of the Municipal Administrator (OMAD) joined the MPDO in order to move forward the formulation of the CLUP. In the week-long consultation, the new Technical Working Group (TWG) learned about the new 2014 HLURB Guidelines, which among others require the conduct of the Climate and Disaster Risks Assessment (CDRA) as a prerequisite to the CLUP.
- **Partnership for technical assistance.** In February 2018, a Memorandum of Agreement was signed with the UP School of Environmental Science and Management (UP SESAM) for technical assistance on the formulation of the CDRA.
- **CDRA Technical Working Group (TWG) workshop**. A CDRA TWG was formed to complement the CLUP TWG. On 5-7 March 2018, the UP SESAM facilitated a

workshop to the CDRA TWG on how to conduct CDRA held at the Local Government Academy Training Center, Los Banos, Laguna.

- **Climate and Disaster Risks Assessment**. From May – September 2018, the CDRA TWG conducted the CDRA in the town's 42 barangays. It started with a pilot testing in Barangay Bagacay to test the validity of the tool.
- **Volunteer participation**. From 2012-2013, a volunteer was deployed at the LGU to help revise the CLUP through the Australian Youth Ambassadors for Development (AYAD). Moreover, a partnership with the US Peace Corps Response Volunteer (PCRV) was pursued by the municipality in 2018-2019 for a technical person to help in the municipality's CDRA preparations and climatology project. By November 2018, two more volunteers arrived from France Volontaires Philippines and Pistes Solidaires to help in the cultural and heritage plan of the municipality.
- **Sub-Sector analysis**. In support of the initial sectoral workshop conducted last 2016, a Sub-Sector Analysis writeshop was conducted by key department heads and an expanded CLUP TWG. This was held 18-22 March 2019 in JL New Seabreeze Resort, Bacon, Sorsogon.
- **Zoning Ordinance Writeshop**. By 1-5 April 2019, the Zoning Ordinance Writeshop was dovetailed to the finalization of CDRA analysis held at Vitton and Woodland Resort, Donsol, Sorsogon. It was participated both by the CDRA and CLUP TWGs, with the addition of a representative from the Sangguniang Bayan.
- **Sectoral and public consultation**. Another round of public and sectoral consultation was held last 12 April 2019 at Fusion Café, Gubat, Sorsogon. The draft CLUP was presented and subjected to further comments from select representatives from education, health, women, children, senior citizens, PWD, youth, environment, tourism, transport, agriculture, business, sports, and cultural sectors.
- **Local Development Council (LDC) presentation and adoption**. The 1st draft of the CLUP was presented before the Municipal Development Council (MDC) on 16 April 2019 for validation. It was presided by Mayor Sharon Escoto, and was participated by the 42 Punong Barangays and civil society organization representatives.
- **Revision**. From 2019 to the last quarter of 2020, the technical working group convened to update the CLUP based on the recommendations of the Sangguniang Bayan.
- **CLUP updating and finetuning**. On 25-27 November 2020, the CLUP TWG conducted a workshop at Nature's Spring, Irosin, Sorsogon to revise the CLUP to rectify, consolidate, and align inconsistencies and incoherence of the 1st draft.
- **Public consultation.** Another public consultation was conducted on 22 April 2021 at the Gubat Public Market. It was participated by the 42 punong barangays, representatives from national government agencies, academe, business sector, non-state actors, and the general public.
- **Public consultation and validation.** In aid of the zoning ordinance, the Sangguniang Bayan conducted a separate public consultation on 2 September 2021 at Encinas Pavilion. It was participated by the 42 punong barangays, representatives from national government agencies, academe, business sector, non-state actors, and the general public.
- **Presentation to the Provincial Land Use Committee (PLUC).** On 29 October 2021, the draft CLUP was presented to the PLUC for review held at the Sangguniang Panlalawigan Session Hall.
- **Finalization writeshop.** The CLUP TWG integrated suggestions and recommendations based on the review of the PLUC in a writeshop held at Casa Tente, Matnog on 22-25 November 2021.

I. SOCIO-DEMOGRAPHIC AND ECONOMIC PROFILE

A. Brief Historical Background

The Gubatnon forebears could have been those who settled in Jupi, Tigkiw-na-Saday, and Bulacao during the Formative Filipino Period (1,000 BC to 500 A.D.). This Is supported by archeological explorations in Barangays Jupi and Bulacao by a team from the National Museum in the 1960s, which unearthed an ancient jar and vessel decorated with strips of clay in Barangay Jupi. It was concluded that the early settlers in Jupi had been there as early as 800 A.D. Further, Dr. Luis Camara Dery, in his essay “Footnotes to the History of Gubat, Sorsogon,” cited that two stone bark beaters and four stone axes recovered in Bulacao resembled the pottery-stone tools dated to be about 91 B.C. from the Bato Caves in the neighboring locality of Bacon District of Sorsogon City.

Meanwhile in Tigkiw-na-Saday, rural and hilly sitio of Barangay Tigkiw, earth jars covered by flat stones used for burials was discovered in 1978, which suggested that the group of people that lived there had probably settled in that place between 200 B.C. to 200 A.D. From this, it can be inferred that the settlement in Gubat had existed for more than 2,000 years. Recent excavations in Barangay Ariman, the place where the river that originates in Bentuco meets the sea, also reveal that the people who lived in this town were influenced if not actually populated by a number of foreigners. The jars removed underneath revealed that they were used as burial jars as some of them contained necklace beads and some precious stones.

When the Spaniards arrived in Sorsogon in 1569, they were surprised to find the inhabitants living peacefully. Fr. Jose Castaño, a missionary, described the early Bicolanos (including the early Gubatnons) as a race of impetuosity and valor fond of social dealings; more intelligent and vigorous, more active, industrious and warlike, and adjusted to live in compact villages. In the eastern part of the province of Sorsogon, the Franciscan missionaries established only two churches. One of them was built in Bacon and another one in Bulusan. These two towns developed much earlier than Gubat. It was also the period when the raiders, sometimes called the "Joloans" , made frequent raids all over Visayas and Luzon.

A 1572 document mentioned that there were already 41 settlements within Sorsogon during that time, 34 along the Sorsogon Gulf and 7 in Eastern Sorsogon. Gubat belongs to the settlement along the eastern coast, the others being Bacon, Bantugan, Danlog, Bulusan, Busaingan, and probably Tagdon. Aramag, which was then the name of the first settlement in present-day Gubat was located in the mouth of Ariman and Aropag rivers with houses scattered around it. It was the center of activities since during those times, the major means of transportation was by boat through seas and rivers.

When a group of missionaries made a voyage by sea from Bacon to Bulusan, they encountered a heavy storm halfway through that destroyed their ship forcing them to land at Aramag in the morning of June 13, 1731. Aramag, the former name of Gubat, is thought to have been adopted by Alamag, a Sitio of Tabi that is bounded on the east by barangay Ariman, and the site of the earliest settlement in the municipality. Before reaching the heart of the settlement, the missionaries heard several villagers shout "Gubat!" "Gubat!" (Raid! Raid!)to give warning to the people after a number of Moro joangas were seen nearing the shore for the surprise attack. The friars, thinking that they had made the villagers scamper around, tried to pacify them. The villagers, nevertheless, continued to shout "gubat! gubat!" ignoring the friars. The friars escaped the Moro raid by taking the hills southward until they reached the settlement at Bulusan. Somehow, the name "Gubat" stuck and thereafter, it was used whenever Aramag was being referred to.

B. Geo-physical Characteristics

The Municipality of Gubat is located on the east coast of the Province of Sorsogon. It is the third largest municipality in Sorsogon Province bounded on the North by the Municipality of Prieto Diaz and Bacon District of Sorsogon City, on the South by the Municipality of Barcelona, on the West by Sorsogon City and the Municipality of Casiguran, and on the East by the vast Pacific Ocean (see Map 1).

It is nineteen (19) kilometers from the provincial capital Sorsogon City, eighty-one (81) kilometers from the regional center of Legazpi City, and six hundred and twenty-one (621) kilometers from Manila. The Municipality lies on the coordinates 12° 55' 15.63" north latitude, and 124° 07' 28.66" east longitude.

It has 11,485.62 hectares of land area, and a total of 18,980 hectares of municipal waters and coral reef.

C. Political Subdivisions

Gubat is a second-class municipality belonging to the second congressional district of Sorsogon. It has forty-two (42) barangays (see Map 2) comprised of eight (8) urban barangays (see Table 1), namely:

Table 1. Urban Barangays.

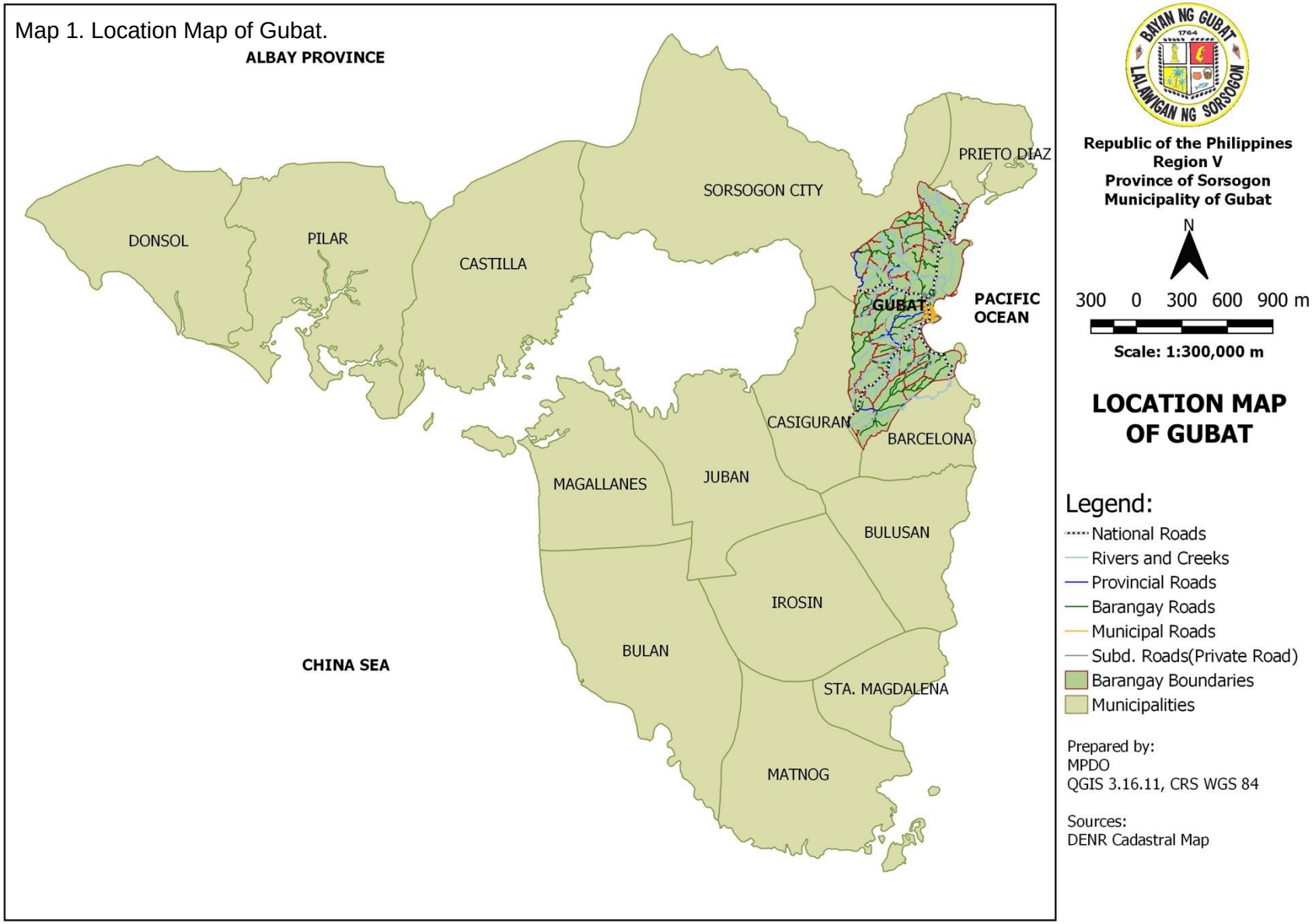
Barangay	Area (sqm)	Barangay	Area (sqm)
Balud del Norte	74,047.22	Manook	185,627.12
Balud del Sur	75,736.87	Panganiban	451,764.29
Cota na Daco	335,435.27	Paradijon	188,859.08
Luna-Candol	201,903.95	Pinontingan	169,615.63

Meanwhile, the following are the 34 rural barangays (see Table 2):

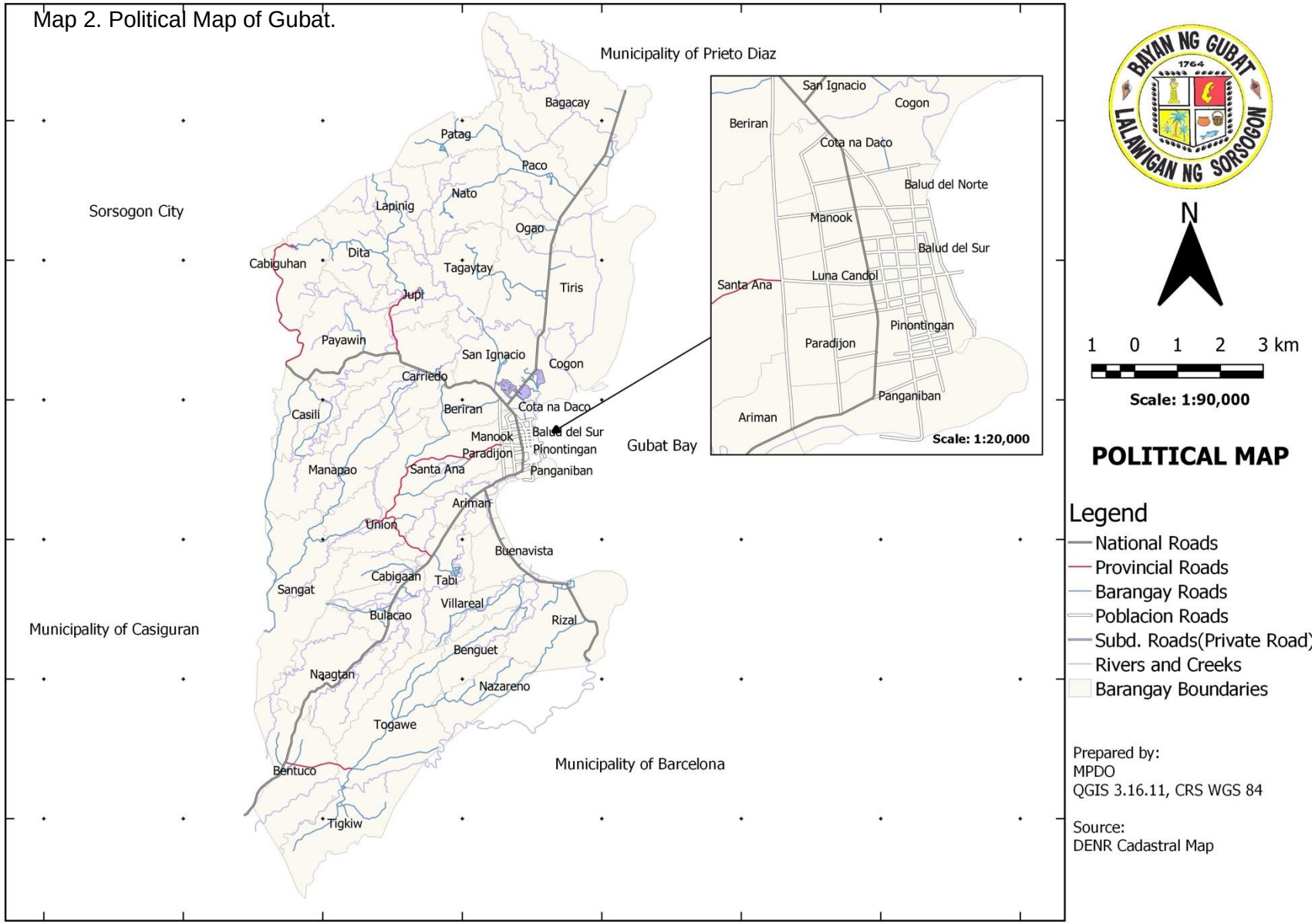
Table 2. Rural Barangays.

Barangay	Area (sqm)	Barangay	Area (sqm)
Ariman	1,531,833.34	Nato	3,609,285.47
Bagacay	7,506,977.06	Nazareno	2,047,090.07
Benguet	1,859,751.16	Ogao	939,920.97
Bentuco	4,631,832.07	Paco	3,866,043.93
Beriran	1,859,751.16	Patag	2,362,617.87
Buenavista	1,420,552.01	Payawin	4,492,564.52
Bulacao	3,104,959.06	Rizal	5,096,985.06
Cabigaan	470,587.85	San Ignacio	3,023,192.79
Cabiguhan	1,859,751.16	Sangat	5,142,810.68
Carriedo	4,128,916.04	Sta. Ana	3,958,655.31
Casili	2,831,596.81	Tabi	2,634,496.07
Cogon	1,605,017.86	Tagaytay	2,553,027.73
Dita	2,501,209.33	Tigkiw	3,688,858.03
Jupi	2,356,127.80	Tiris	9,428,046.85
Lapinig	2,674,758.74	Togawe	4,961,031.61
Manapao	4,217,619.54	Union	3,264,453.88
Naagtan	5,233,324.36	Villareal	1,241,474.34

Map 1. Location Map of Gubat.



Map 2. Political Map of Gubat.



D. Population and Demographic Profile

Total Population

The result of the CY 2015 census showed that the municipality had already reached 59,534 counts compared to the recorded population of 57,327 in 2010 (see Table 3). The current population of the municipality accounts for 7.51 percent of the total population of the Province of Sorsogon. This shows that the municipality has a lower growth rate of 0.72 percent compared to the 1.31 percent growth rate of the province.

Table 3. Population, 1960 - 2015.

Year	Population
1960	31,028
1970	38,412
1980	43,866
1990	43,296
1995	49,716
2000	52,707
2007	55,457
2010	57,327
2015	59,534

Source: PSA, Census of Population and Housing

Determined at 1.2 percent, the annual household growth rate of the municipality is slightly higher than its population growth rate. From this figure, it is expected that households in Gubat will increase from 14,303 households in 2021 to 15,735 households in 2029 or 1,432 additional households in a nine-year period projection (see Table 4).

Table 4. Population and Household Projection, 2021-2029.

Year	Population	Household
2021	62,153	14,303
2022	62,600	14,474
2023	63,051	14,648
2024	63,505	14,824
2025	63,962	15,002
2026	64,423	15,182
2027	64,886	15,364
2028	65,354	15,548
2029	65,824	15,735

Annual Population Growth Rate: 0.72%
Household Growth Rate: 1.2%

Urban-Rural Population

In 2015, the level of urbanization or the percentage of population residing in urban barangays of the municipality was 22.49 percent. This means that a total of 13,388 persons reside in the eight (8) barangays classified as urban. It also shows a decrease in the level of urbanization from 1995, which was 25.15 percent.

The rural population in 2015 comprises 77.51 percent or accounts for 46,146 persons. This figure is 2.66 percent higher than the rural population in 1995 which is 74.85 percent or 37,211 persons.

While previous records in 1995 census showed that the urbanity movement in the municipality is slow, there was a significant increase of rural population or decrease in urbanity movement in the municipality in the year 2015 (see Table 5). This could be attributed to the development of new subdivisions in barangays Cogon and San Ignacio, which are both classified as rural barangays.

Table 5. Urban-Rural Population,1995 and 2015.

Barangay	1995		2015	
	Household	Population	Household	Population
Urban				
Balud del Norte	349	1,664	444	1,961
Balud del Sur	240	1,176	270	1,192
Cota na Daco	270	1,259	386	1,707
Luna Candol	491	2,297	533	2,356
Manook	302	1,462	317	1,401
Panganiban	438	2,036	500	2,211
Paradijon	275	1,265	293	1,295
Pinontingan	298	1,346	286	1,265
Sub-Total	**2,663**	**12,505**	**3,029**	**13,388**
Rural				
Ariman	261	1,309	375	1,657
Bagacay	548	2,825	753	3,328
Benguet	116	560	123	543
Bentuco	273	1,417	379	1,676
Beriran	145	701	228	1,007
Buenavista	143	804	226	997
Bulacao	324	1,481	458	2,024
Cabigaan	161	926	253	1,116
Cabiguhan	143	786	174	771
Carriedo	379	1,848	508	2,244
Casili	177	940	249	1,101
Cogon	201	1,013	518	2,289
Dita	100	546	110	488
Jupi	197	1,062	248	1,095
Lapinig	70	364	110	485
Manapao	155	742	219	968
Naagtan	194	978	221	975
Nato	182	986	255	1,129
Nazareno	75	349	118	522
Ogao	207	991	300	1,327
Paco	243	1,367	351	1,552
Patag	100	522	134	593
Payawin	243	1,228	365	1,611
Rizal	510	2,566	609	2,690
San Ignacio	216	1,121	508	2,244
Sangat	152	845	188	832
Sta. Ana	262	1,225	456	2,015
Tabi	328	1,672	380	1,681
Tagaytay	142	737	233	1,031
Tigkiw	207	1,028	231	1,019
Tiris	323	1,518	465	2,053
Togawe	192	907	286	1,265
Union	239	1,197	270	1,193
Villareal	112	650	141	625
Sub-Total	**7,320**	**37,211**	**10,442**	**46,146**
TOTAL (Urban + Rural)	**9,983**	**49,716**	**13,471**	**59,534**

The average household size dropped from 4.98 in 1995 to 4.39 household size in 2015. The average household size in rural barangays in 1995 is higher than urban while the values are the same in 2015, with Barangay Dita having the largest household size at 4.43 (see Table 6).

Table 6. Household Distribution by Barangay, 1995 and 2015.

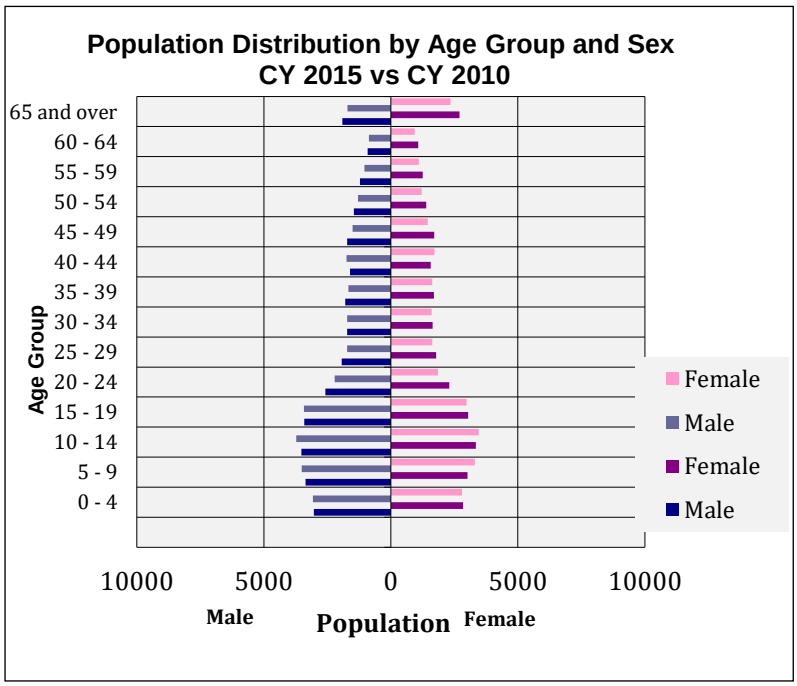
Barangay	1995	2015
	Average Household Size	Average Household Size
Urban		
Balud del Norte	4.77	4.38
Balud del Sur	4.90	4.39
Cota na Daco	4.66	4.39
Luna Candol	4.68	4.38
Manook	4.84	4.40
Panganiban	4.65	4.39
Paradijon	4.60	4.40
Pinontingan	4.52	4.40
Sub-Total Average	**4.70**	**4.39**
Rural		
Ariman	5.02	4.39
Bagacay	5.16	4.36
Benguet	4.83	4.41
Bentuco	5.19	4.39
Beriran	4.83	4.40
Buenavista	5.62	4.39
Bulacao	4.57	4.39
Cabigaan	5.75	4.39
Cabiguhan	5.50	4.42
Carriedo	4.88	4.38
Casili	5.31	4.40
Cogon	5.04	4.38
Dita	5.46	4.43
Jupi	5.39	4.40
Lapinig	5.20	4.40
Manapao	4.79	4.40
Naagtan	5.04	4.40
Nato	5.42	4.41
Nazareno	4.65	4.41
Ogao	4.79	4.40
Paco	5.63	4.40
Patag	5.22	4.42
Payawin	5.05	4.39
Rizal	5.03	4.37
San Ignacio	5.19	4.38
Sangat	5.56	4.41
Sta. Ana	4.68	4.39
Tabi	5.10	4.40
Tagaytay	5.19	4.41
Tigkiw	4.97	4.39
Tiris	4.70	4.38
Togawe	4.72	4.40
Union	5.01	4.40
Villareal	5.80	4.42
Sub-Total Average	**5.08**	**4.39**
TOTAL (Urban + Rural) Average	**4.98**	**4.39**

As per result of the census conducted in 2015, the largest age group population is age group 10-14, which accounts for 11.54 percent followed by age group 15-19 making up 10.84 percent of the total population (see Table 7). Of the total population, 60.16 percent belongs to the working-age population (15 to 64 years). Children below 15 years of age comprises 32.09 percent while older persons with age 65 years and over accounts for 7.75 percent. Data also shows that male slightly outnumbered the females. Of the total population, 50.67 percent is male while 49.33 percent is female (see Graph 1).

Table 7. Population Distribution by Age Group and Sex, 2010 and 2015.

Population Distribution by Age Group and Sex CY 2015 and 2010						
Age Group	Censal Year 2 (2015)			Censal Year 1 (2010)		
	Male	Female	Total	Male	Female	Total
0 - 4	3,024	2,839	5,863	3,624	3,570	7,194
5 - 9	3,359	3,012	6,371	3,916	3,587	7,503
10 - 14	3,524	3,349	6,873	3,997	3,780	7,777
15 - 19	3,410	3,041	6,451	2,976	2,464	5,440
20 - 24	2,574	2,297	4,871	1,766	1,510	3,276
25 - 29	1,932	1,788	3,720	1,619	1,554	3,173
30 - 34	1,722	1,649	3,371	1,590	1,589	3,179
35 - 39	1,793	1,692	3,485	1,768	1,757	3,525
40 - 44	1,612	1,563	3,175	1,664	1,622	3,286
45 - 49	1,725	1,709	3,434	1,462	1,327	2,789
50 - 54	1,451	1,397	2,848	1,244	1,172	2,416
55 - 59	1,220	1,249	2,469	974	1,021	1,995
60 - 64	915	1,074	1,989	854	902	1,756
65 and over	1,907	2,707	4,614	1,724	2,294	4,018
Total	**30,168**	**29,366**	**59,534**	**29,178**	**28,149**	**57,327**

Source: National Statistics Office/Philippine Statistics Authority/Municipal Records.



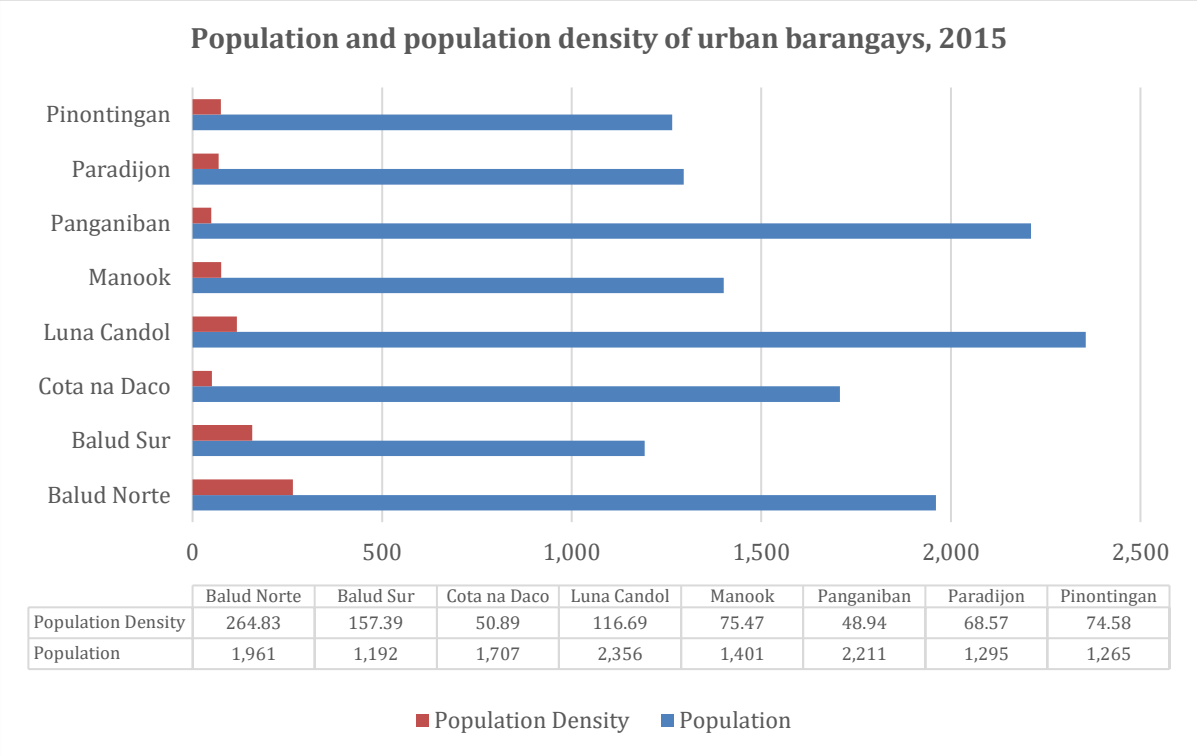
Graph 1. Population Distribution by Age Group and Sex, 2015 and 2010.

Population Density

Based on the total land area of 11,485.62 hectares, the population density of the municipality in 2015 stands at 5.18 per hectare, while urban or población barangays remain to have the highest population density with barangay Balud del Norte posting the highest figure with 264.33 per hectare population density (see Table 8 and Graph 2).

Table 8. Population, Land Area and Population Density per Barangay, 2015.

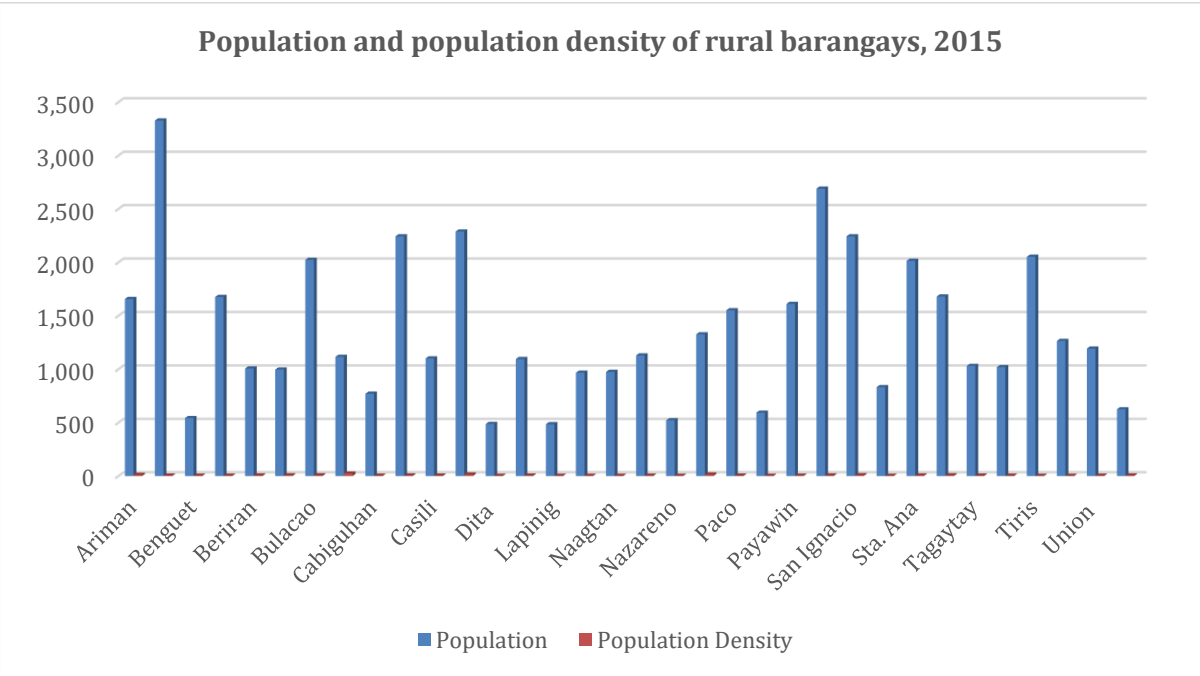
Barangay	Population	Land Area (in has)	Population Density
Ariman	1,657	153.18	10.82
Bagacay	3,328	750.70	4.43
Balud Norte	1,961	7.40	264.83
Balud Sur	1,192	7.57	157.39
Benguet	543	193.29	2.81
Bentuco	1,676	463.18	3.62
Beriran	1,007	185.98	5.41
Buenavista	997	142.06	7.02
Bulacao	2,024	310.50	6.52
Cabigaan	1,116	47.06	23.72
Cabiguhan	771	285.47	2.70
Carriedo	2,244	412.89	5.43
Casili	1,101	283.16	3.89
Cogon	2,289	160.50	14.26
Cota na Daco	1,707	33.54	50.89
Dita	488	250.12	1.95
Jupi	1,095	235.61	4.65
Lapinig	485	267.48	1.81
Luna Candol	2,356	20.19	116.69
Manapao	968	421.76	2.30
Manook	1,401	18.56	75.47
Naagtan	975	523.33	1.86
Nato	1,129	360.93	3.13
Nazareno	522	204.71	2.55
Ogao	1,327	93.99	14.12
Paco	1,552	386.60	4.01
Panganiban	2,211	45.18	48.94
Paradijon	1,295	18.89	68.57
Patag	593	236.26	2.51
Payawin	1,611	449.26	3.59
Pinontingan	1,265	16.96	74.58
Rizal	2,690	509.70	5.28
San Ignacio	2,244	302.32	7.42
Sangat	832	514.28	1.62
Sta. Ana	2,015	395.87	5.09
Tabi	1,681	263.45	6.38
Tagaytay	1,031	255.30	4.04
Tigkiw	1,019	368.89	2.76
Tiris	2,053	942.80	2.18
Togawe	1,265	496.10	2.55
Union	1,193	326.45	3.65
Villareal	625	124.15	5.03
Total	**59,534**	**11,485.62**	**Ave. 5.18**



	Balud Norte	Balud Sur	Cota na Daco	Luna Candol	Manook	Panganiban	Paradijon	Pinontingan
Population Density	264.83	157.39	50.89	116.69	75.47	48.94	68.57	74.58
Population	1,961	1,192	1,707	2,356	1,401	2,211	1,295	1,265

Graph 2. Population and Population Density of Urban Barangays, 2015.

Among the 34 rural barangays, only four barangays (Ariman, Cabigaan, Cogon, Ogao) posted a double-digit population density of which Cabigaan is the most densely populated rural barangay with 23.72 population density per hectare (see Table 8). The remaining barangays have single-digit densities (see Graph 3) with the following four barangays having the lowest population densities: Dita (1.95), Naagtan (1.86), Lapinig (1.81), and Sangat (1.62) (see Table 8).



Graph 3. Population and Population Density of Rural Barangays, 2015.

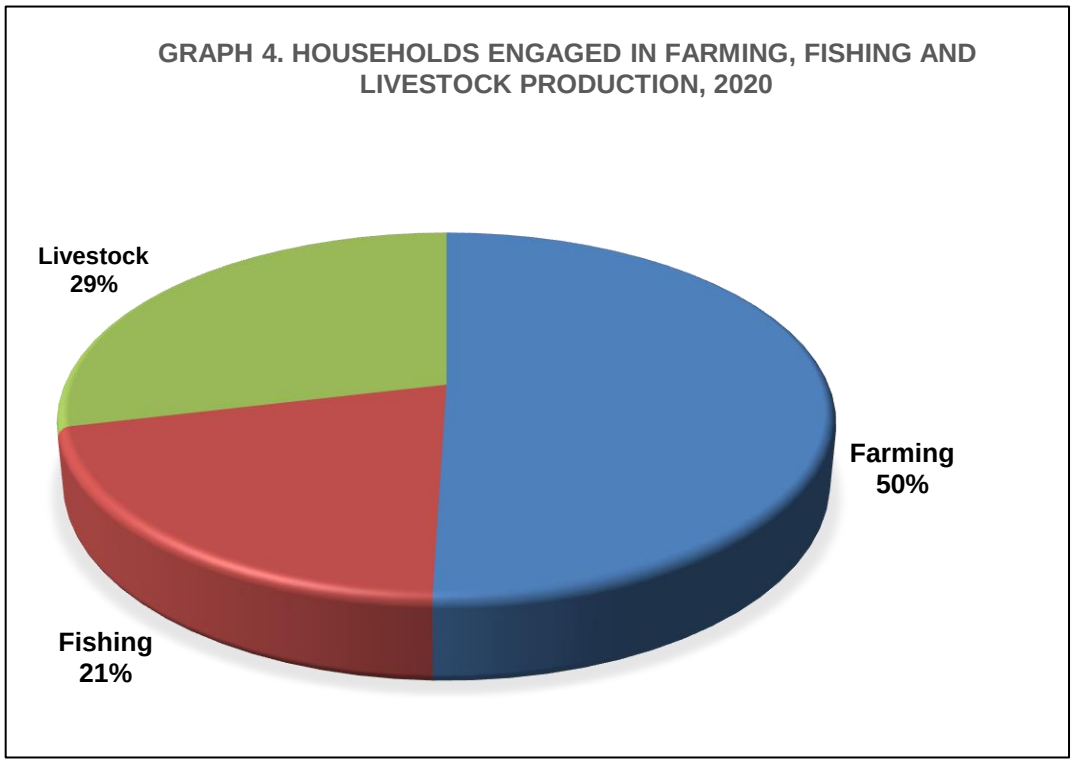
Ethnicity*

Close to 97 percent of the household population in the whole province of Sorsogon are Bicolanos. Other ethnic groups include Tagalog (0.38%), Kankanaey (0.22%), Bisaya (0.17%), and Masbateño (0.13%).

*Source:https://psa.gov.ph/content/five-persons-every-household-sorsogon
http://directory.ucanews.com/dioceses/philippines-sorsogon/409

E. Major Economic Activities

Agriculture is the main economic resource of Gubat where the majority of the population is engaged in farming, livestock production and fishing. According to the Office of the Municipal Agriculturist (OMAg), there were 6,756 households enrolled in the Registry System for Basic Sectors in Agriculture (RSBSA) in 2020. This number comprised almost 50 percent of the 13,471 total number of households in the municipality (see Graph 4).



Graph 4. Household Engaged in Farming, Fishing, and Livestock Production, 2020
Source: 2020 RSBSA, Office of the Municipal Agriculturist (OMAg).

Data from Business Process and Licensing Office (BPLO) shows a substantial decline of business registrations and employment generation from 2019 to 2020. Gubat recorded a 35 percent decline in registrations by commercial establishments from 1172 in 2019 to 759 in 2020. A direct impact of the COVID-19 pandemic, closures of several establishments evidently affected the sector's employment generation with a 26 percent drop in 2020 (see Table 9).

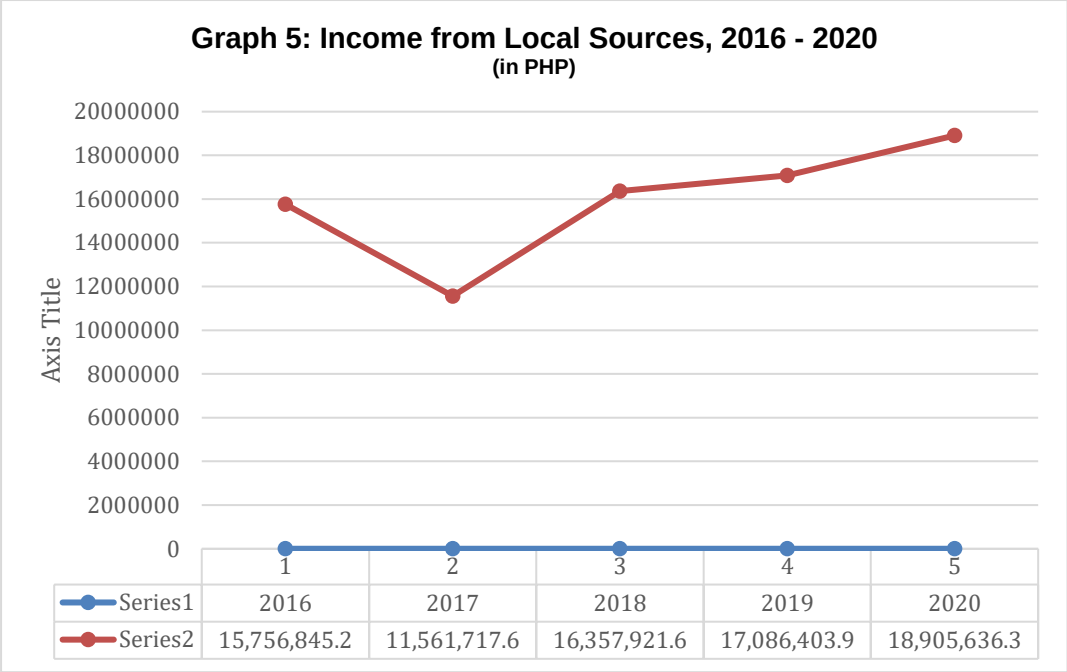
Table 9. Inventory of Registered Commercial Establishments by Economic Activities, 2019-2020

Economic Activities	2019		2020	
	Number of Establishments	Number of Employees	Number of Establishments	Number of Employees
Wholesale and Retail Trade	836	1633	501	1120
Personal Services (Restaurants, Food Service, Hotel, Recreation and Accommodation)	86	208	56	176
Transport, Storage and Communication	14	180	11	131
Financial Intermediation	24	111	23	108
Health, Education and Social Work	14	74	11	67
Construction	3	13	2	2
Real Estate, Renting and Business Activities	119	138	102	122
Other community, social and personal service activities	76	153	53	131
Total	**1172**	**2510**	**759**	**1857**

Data Source: Business Permit and Licensing Office (BPLO)

Moreover, the results of the assessment of the LGU competitiveness and business-friendliness from the National Competitiveness Council and Philippine Chamber of Commerce and Industry's Business-Friendly LGU Awards Program show that in 2018, Gubat was at the bottom of overall ranking of all municipalities at 1,064 out of 1,368 entries. Among 1st and 2nd class municipalities, it ranked at 430 among 490 entries, an improvement of 50 places from its ranking in 2016.

Consequently, recent reforms on annual targets, management, and overall fiscal effort led to the improvement in the collection of income from local sources of the municipality. Data from Municipal Treasurer's Office (MTO) showed an annual growth rate of four percent from 2016-2020. Except for 2017, there was a general trend of increasing collections from local sources from 2016 to 2020 (see Graph 5).



Graph 5. Income from Local Sources, 2016-2020
Data Source: Municipal Treasurer's Office (MTO)

F. Poverty Incidence*

As per 2015 PSA record, the poverty incidence among families in the municipality was at 30.5 percent (see Table 10), which was significantly lower than the provincial rate of 46.20 percent and regional rate of 45.10 percent, but higher than the national incidence of 21.60 percent. On the other hand, poverty incidence among individuals based on the estimates by the 2015 Family Income and Expenditure Survey (FIES) was 36 percent, lower than the 41.1 percent in 2012.

Table 10. Poverty incidence in Gubat, 2006, 2009, 2012, and 2015.

Year	Poverty Incidence
2006	31.7
2009	33.6
2012	25.6
2015	30.5

Data Source: PSA, 2015 (2015 Municipal and City Level Poverty Estimates)

However, as per RCBMS 2016 results, there were 7,979 households below the poverty threshold, nearly 59 percent of the total households, and 42 percent of households had income below the food threshold.

Based on the June 2015 data from the Department of Social Welfare and Development (DSWD) Region V, there were 4,042 family beneficiaries of the Pantawid Pamilyang Pilipino Program (4Ps) in Gubat. Barangay Bagacay accounted for the greatest number with 243 families while Barangay Paradijon had the least number of beneficiaries with 17 families. By 2019, 4Ps beneficiaries decreased to 3,833.

* In 2018, a Filipino family of five (5) needed P 7,337.00 average monthly income to buy their Minimum Basic Food Needs and P 10,481.00 monthly to include Other Minimum Basic Needs. In 2009, the food threshold was at PhP 4,869 and poverty threshold was at PhP 7,017.00.

Meanwhile, the labor force participation for ages 15 to 24 years (the proportion of the population ages 15 to 24 that was economically active; all the people who supply labor force for the production of goods and services during a specific period) was at 45.5 percent, while the youth unemployment rate of the labor force ages 15 to 24 year without work but available for and seeking employment was at 54.5 percent (see Table 11).

Table 11. Labor Force, 2018.

	Population 15 Years and Over	Employed	%	Unemployed	%
Male	20,261	13,764	67.9	6,497	32.1
Female	20,166	4,615	22.9	15,551	77.1
Both Sexes	40,427	18,379	45.5	22,048	54.5

Data Source: PSA, 2018 (Philippine Labor Force Participation Rate 1990-2018)

G. Religion

The 2011 CBMS shows a predominantly Catholic Gubatnons at ninety-five percent (95%), followed by Iglesia ni Cristo at two percent (2%), and Born Again Christian at one percent (1%) (see Table 12).

Table 12. Religion Distribution, 2011.

Religion	Number
Roman Catholic	53,456
Iglesia Ni Cristo	1,178
Born Again Christian	628
Others	261
Protestant	219
Jehovah's Witness	122
Seventh-Day Adventist	94
Mormons	86
None	51
Islam	12
Aglipay	1
TOTAL	**56,108**

H. Languages/Dialects

Gubat is under Southern Sorsogon subgroup* with affinities to the Visayan because of its close geographical proximity from neighboring island Samar or Waray-waray. This dialect appears also in Ethnologue with alternative names as Bikol Sorsogon, Gubat, Southern Sorsogon, and Waray Sorsogon. English and Tagalog-based national language now officially known as "Filipino" is the language used in education and various forms of communications.

(*12 dialects of Bicol: Buhi, Daraga, Iriga, Legaspi, Libon, Masbate, Naga, Northern Catanduanes, Oas, Southern Catanduanes, Northern Sorsogon, Southern Sorsogon, McFarland, 1974.)

Source: Simons, G. F. & Fennig, C.D. (eds.), (2018). Ethnologue: Languages of the world, 21st edition. Dallas, Texas, SIL International. Retrieved from http://ethnologue.com.

II. PHYSICAL FEATURES AND ENVIRONMENTAL CONDITION

A. Topography

The town is predominantly level to nearly level to very gently sloping (0-9%) spread over 7,350 hectares that represent 70.4 percent of the total land area (see Map 3). The town has an average coastal elevation of no higher than 10 meters above sea level, which makes it susceptible to storm surges. The gently sloping area (9-18%) is 857 hectares or 8.3 percent of the total land area widely scattered over the whole municipality. Moderately sloping or rolling to strongly sloping or strongly rolling has an area of 2,032 hectares (19.6 percent of the total land area). This type is situated in the northern part of the municipality. The strongly hilly to mountainous portion of more than 30 percent and located on the southwest side of the municipality has a total land area of 181 hectares (1.7 percent of the total land area). Unchecked spot elevations in the municipality are found in Bentuco at 115 meters; Togawe at 95 meters; Naagtan at 87 meters; and parts of Cabigaan and Bagacay at 73 meters. The highest point in Gubat is 166 meters above sea level at Tigkiw, at the southernmost part of the municipality. The other barangays have an average elevation of 24 meters.

B. Vegetation Cover

Around 9,884.33 hectares (86.06%) out of the total land area of 11,485.62 hectares is classified as agricultural (see Map 4). As of 2019, coconut areas accounted for 7,490.13 hectares (75.78%) of the total agricultural area while farms grown to palay totaled 2,032.69 hectares (21.56%). The remaining 361.51 hectares (3.66%) is devoted to pasture areas and open fields all over the municipality (see Map 4).

Meanwhile, there is an estimated 244.30 hectares planted to abaca under coconuts in the barangays of Naagtan, Tigkiw, Togawe, and Bentuco. For the year 2019, pili under coconut was around 217.6 hectares, with 10,880 productive trees. Banana was estimated at 952.86 hectares planted under coconut, while rootcrops were at 216.94 hectares. Vegetables are planted in backyard gardens while a few farmers also venture in commercial vegetable growing. Collectively for all vegetable crops, a total area of 105.56 hectares was planted during the year 2019.

C. Soil

Different soil types characterize the terrestrial territory of the municipality of Gubat (see Map 5). These are Bascaran clay, comprising 2,834 hectares; clay loam, 4,877 hectares; sandy loam, 240 hectares; hydrosoil, 354 hectares; fine sandy loam, 406 hectares; and fine clay loam, 1,709 hectares. The coastal barangays have the hydrosoil type or the beach type of soil.

The clay loam, fine clay loam, and the Bascaran clay are the primary medium of agriculture in the municipality. The clay loam, which has the biggest area coverage, is found in the lowlands, while the Bascaran clay is found exclusively in the highlands.

Soil Characteristics

Clay Loam

Depth	Characteristics
0-40 cm	Surface soil, clay loam, dark brown to brick reddish brown; coarse granular to blocky; highly plastic when wet, but becomes brittle upon drying. It has a fair organic matter content and is well penetrated by roots. Boundary to the subsoil is wavy and diffused.
40-110 cm	Subsoil, clay, reddish brown, dark brown to brown; coarse granular to columnar. It is mottled black and gray, highly plastic and sticky when wet, and brittle and hard when dry. It is moderately compact. Boulders are present in some places in this layer. It has a diffused and wavy boundary to the lower layer.
110-170	Lower subsoil, clay, dark brown to reddish brown; blocky to columnar. Presence of gray and bluish streaks and concretions. Boundary to the substratum is clear.
170-200	Substratum, clay, dark brown to reddish brown; moderately compact and columnar with plenty of concretions. Underneath is reddish orange and gray and highly weathered parent material.

Bascaran Clay

0-40	Surface soil, clay, brownish gray to grayish brown and light reddish brown; moderately compact; blocky structure; slightly plastic when wet; fair amount of organic matter. Gravel is present.
40-65	Subsoil, silty clay to clay, grayish brown to dark brown with abundant brick red streaks; plastic when wet and brittle when dry; coarse columnar. Weathered yellowish gravel is present in this layer. Boundary is diffused and smooth to the lower horizon.
65-115	Lower subsoil, clay, brownish gray splotched with red; columnar and contains yellowish orange gravel. Boundary is smooth and diffused.
115-150	Substratum, clay, yellowish brown, grayish brown to brownish gray, massive. Compact.

Hydrosoil

The hydrosoil in the municipality of Gubat comprises the areas of swamps and marshes. The areas are under water practically the whole year round, and are extensive along the Gubat coastline. The hydrosoil is generally characterized by a brackish aqueous horizon that is about 100 centimeters deep or more depending upon the rise and fall of the tide. Underneath the aqueous layer is the sub-aqueous horizon. It is slimy, brownish gray to grayish brown to light gray, fine to coarse sandy clay to silty clay with plenty of plant remains. The depth ranges from 35 to 80 centimeters. The basal horizon is also slimy, ashy gray sandy clay. The depth ranges from 80 to 150 centimeters or more from the sub-aqueous surface.

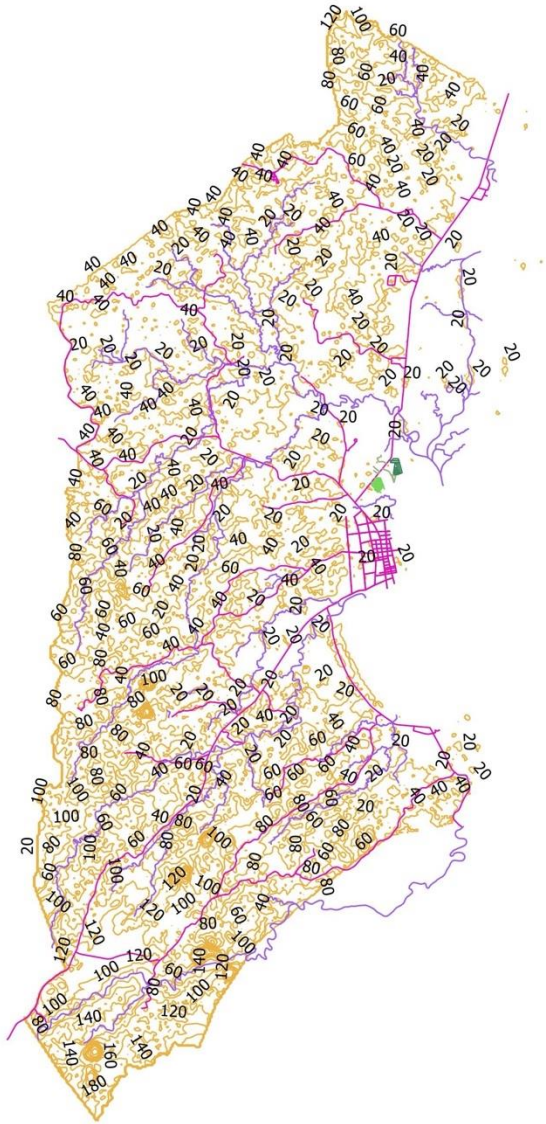
Fine Sandy Loam

0-15	Surface soil, fine sandy loam, black to grayish black; friable; fine granular; loose and mellow in all moisture conditions. Fair in organic content and no stones boundary to the subsoil is smooth and clear.
30-60	Lower subsoil, silt loam, brown to grayish brown and mottled brown; structureless; very compact in dry and wet conditions. Boundary to substratum is smooth and diffused.
60-150	Substratum, sandy loam, light gray and compact. Below the substratum is a layer of dark gray clay.

Clay Loam

0-60	Surface soil, clay loam; grayish black to reddish brown; coarse granular and moderately compact; slightly sticky and plastic when wet and very crumbly when dry. Contain a good amount of organic matter and coarse skeleton is present on areas along rivers. Boundary to the subsoil is clear and wavy.
60-80	Subsoil, clay; reddish brown to strong brown; coarse granular to columnar; moderately compact; very sticky and plastic when wet. In some places, stones are present. Boundary to the lower layer is diffused and wavy.
80-120	Lower subsoil, clay; dark brown to reddish brown with bluish black mottling; coarse columnar. Free from stones. Boundary to the substratum is clear and smooth.
120-below	Substratum, clay; arrange brown to reddish brown speckled yellow and black; coarse granular. This layer rests on highly weathered sandstone and tuff.

Map 3. Elevation Map.



MUNICIPALITY OF GUBAT

N

Elevation Map

1 0 1 2 3 4 km

1:90,000

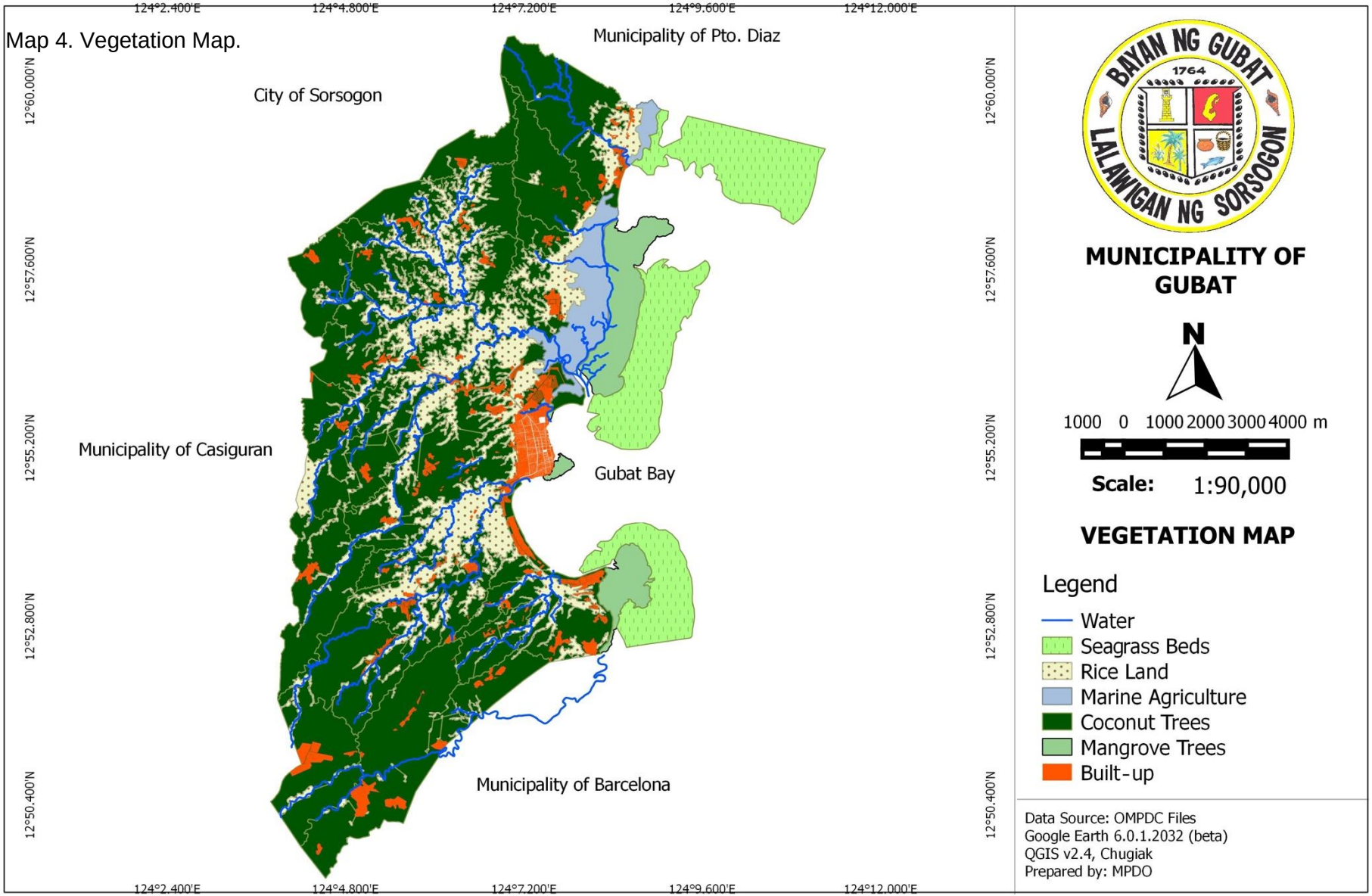
Legend

- Contour Lines
  Slope 20-180
- Rivers Creeks
- Road and Streets

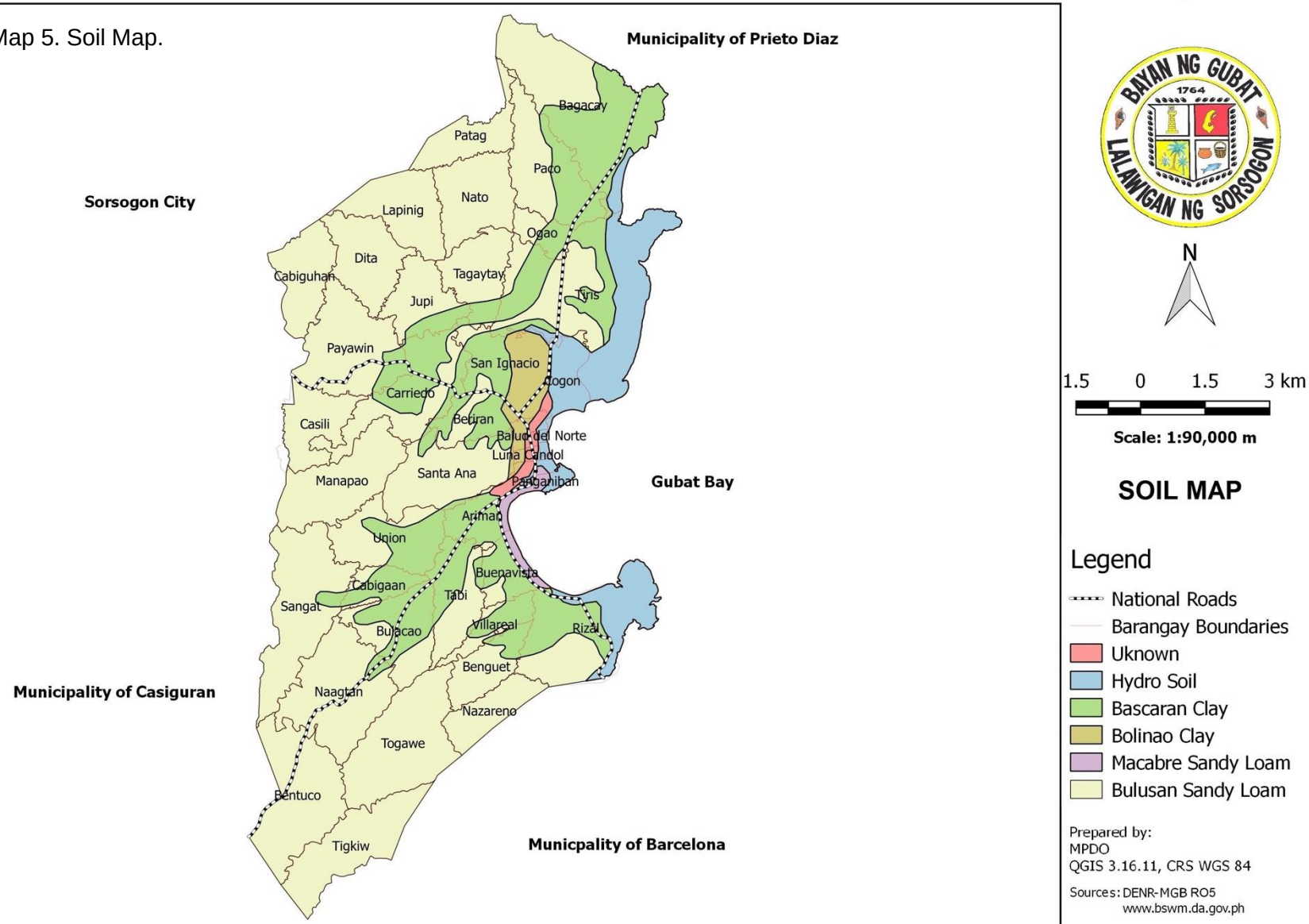
Published by:
Municipal Planning and Development Office
Local Government Unit of Gubat
Gubat, Sorosogon
QGIS V. 2.2.0, WGS 84/UTM 51N

Sources:
Google Earth Satellite Imagery 2010
ASTER-GDEM 2011

Map 4. Vegetation Map.



Map 5. Soil Map.



D. Municipal Waters

Gubat is interspersed by creeks and rivulets that are mostly tributaries of the three main rivers called *Bulacao, Basiao,* and *Tingting* (see Map 6). The *Bulacao* River has two sources: one originates from Ariman in Barangay Bentuco flowing through Anibong, Malidlid and Calumpit, all sitios of Barangay Bulacao, to Barangay Tabi and Ariman where it meets the sea. The other source originates from Liyang, Sitio Patong in Bentuco, to Lucha in Bulacao and merges at Calumpit with the waters originally coming from Sitio Ariman, Bentuco. The *Basiao* River starts from the numerous springs in Barangay Cabigaan, to Pandan in Bulacao, to Arasiang in Barangay Union, to Tangke in Barangay Sta.Ana, to Aropag in Barangay Ariman and into the sea.

The *Tingting* River serves the northwestern part of the municipality. From a small brook in Manapao, it flows to Caragti in Barangay Carriedo, to Carriedo proper, then to Maroc-baroc and Tingting in Barangay San Ignacio, then to the southern part of Barangay Tiris and flows out to the sea. Another source originates from Barangay Casili to Barangay Payawin, to Barangay Jupi and then merges at Tingting with the waters originally coming from Manapao. From Tingting, rivulets and creeks traverse the outlying plains of the different sitios of Barangay Dita and the barangays Lapinig and Patag. All rivers in the municipality empty to the Pacific Ocean.

Meanwhile, the territorial waters of Gubat are the areas confined within the line from and between the political boundary of Prieto Diaz and Gubat extending westward up to the point of the vertical line from and between the political boundary of Barangay Bagacay. In the south, it is bounded by the municipal waters of Barcelona and Gubat.

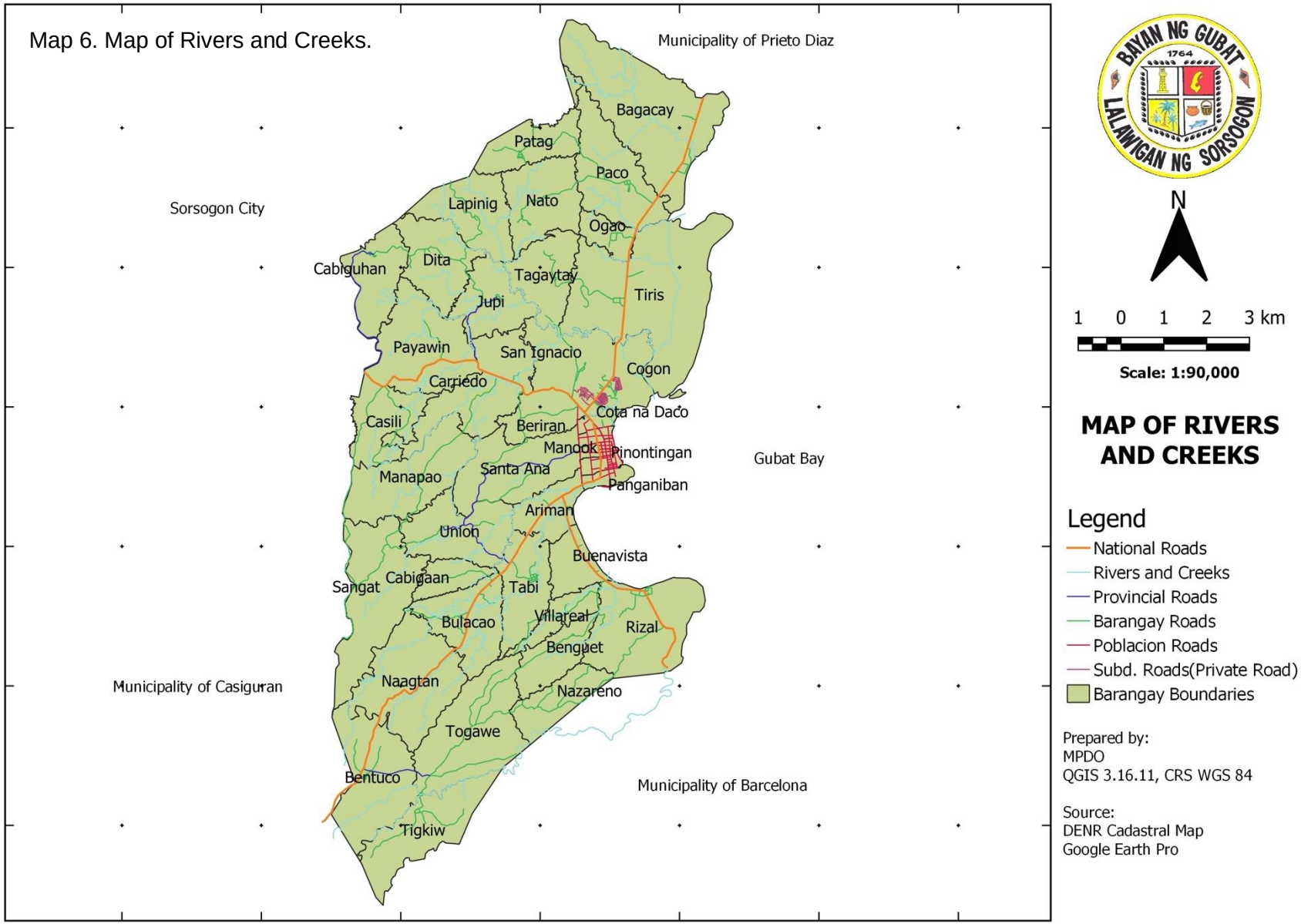
As described by the National Mapping and Resources Information Agency (NAMRIA), the territorial waters of Gubat are bound by its general coastline and the lines technically described as follows (see Table 13):

Table 13. Territorial Waters Boundaries.

Point	Latitude	Longitude	Remarks
Beginning at 1	12° 59’ 57”	124° 08’ 38”	Coastal Terminal Point, MBM 38
Thence 2	12° 57’ 11”	124° 19’ 42”	
Thence 3	12° 55’ 11”	124° 19’ 08”	
Thence 4	12° 54’ 30”	124° 18’ 09”	
Thence 5	12° 53’ 52”	124° 17’ 44”	
Thence 6	12° 52’ 26”	124° 08’ 15”	Coastal terminal Point, MBM 01
Thence following the coastline to 1			

Data source: Office of the Municipal Agriculturist (OMAg).

Map 6. Map of Rivers and Creeks.



E. Climate

The municipality experiences a Type II climate based on the Modified Coronas Classification characterized by no dry season with a very pronounced maximum rainfall from December to February during the Northeast Monsoon (*Amihan*). The highest monthly average rainfall occurs on November. No month can be considered as dry. However, April receives the least amount of rainfall. The warmest month occurs on the month of May while the coolest month falls on the month of February (PAG-ASA Sorsogon Synoptic Station, 2021).

There are 2 seasonal winds passing the municipality at different times of the year (see Map 7) namely Northeast monsoon or “Amihan” and Southwest Monsoon or “Habagat”. Amihan is a seasonal wind blowing from the northeast direction and is characterized by dry and cold air. It causes cloud development and rainfall at the eastern section of the country where Sorsogon Province is situated. It normally occurs during the months of November up to the middle of March each year. While the southwest monsoon, locally known as “Habagat” is a seasonal wind blowing from the southwest direction and characterized by warm and humid/moist air and causes extensive cloud development and rainfall at the western section of the country. It may reach Sorsogon province during strong surge or when it is enhanced by a Tropical Cyclone. It usually occurs during the months of May to September.

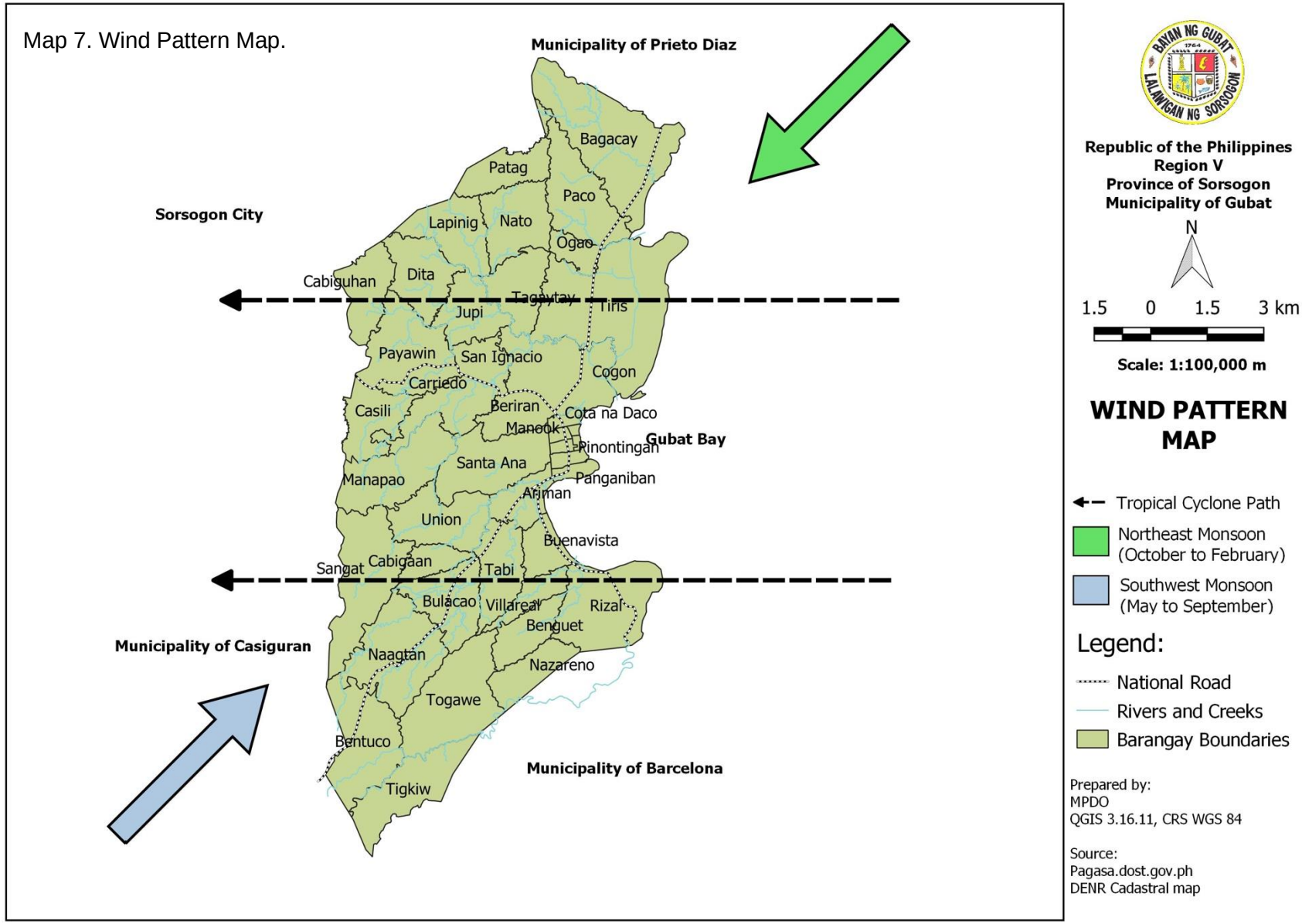
The municipality is mostly visited by tropical cyclones by the last quarter of the year as shown in Figure 1 based on the data of PAG-ASA on Sorsogon Province. Based on the seventy-two (72)-year data record, a total of thirty-eight (38) tropical cyclones directly hit the province, twenty (20) of which are under typhoon category, twelve (12) are tropical storms, while six (6) are tropical depression. Most occurrences fall on the month of November, while there was no direct passage for the months of February, March and April. Although most of these tropical cyclones significantly affected the province and brought about tremendous amount of rainfall even without directly crossing the land.

Graph 6 shows the observed average monthly maximum, mean, and minimum temperatures in Sorsogon Province from 2010 to 2020 based on PAG-ASA Sorsogon Synoptic Station. The average mean temperature ranges from 25.3°C and 28.3°C. The warmest occurs during the months of May and June at 32.7°C and 32.4°C respectively, while the coolest month falls on February at 22.1°C.

In terms of rainfall, pronounced maximum precipitation occurs in the months of November, December, and January, at 537.9 mm, 907.5 mm, and 630.5 mm, respectively (Graph 7). This happens during the Northeast (Amihan) monsoon. While there is no dry month, April and May receive the least amount of rainfall at 123.77 mm and 172.9 mm, respectively (PAG-ASA, 2021).

Due to high temperature and presence of surrounding bodies of water, Gubat is relatively humid. The most humid months in Sorsogon Province are November, December, and January that ranges from 89% - 90%, while the least humid days occur during the month of May at 83% (Graph 8). The annual mean relative humidity is 86% (PAG-ASA, 2021).

Map 7. Wind Pattern Map.



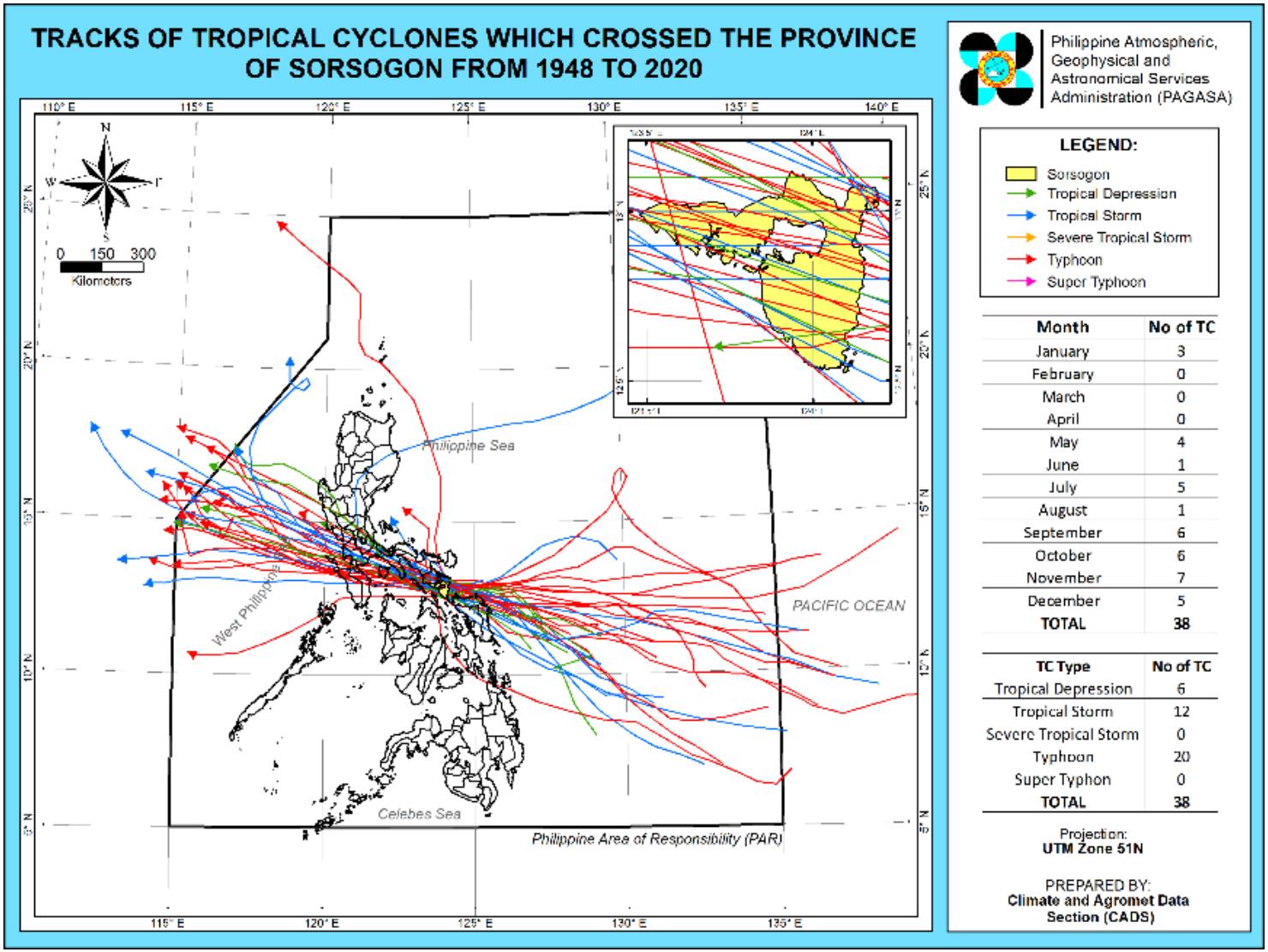
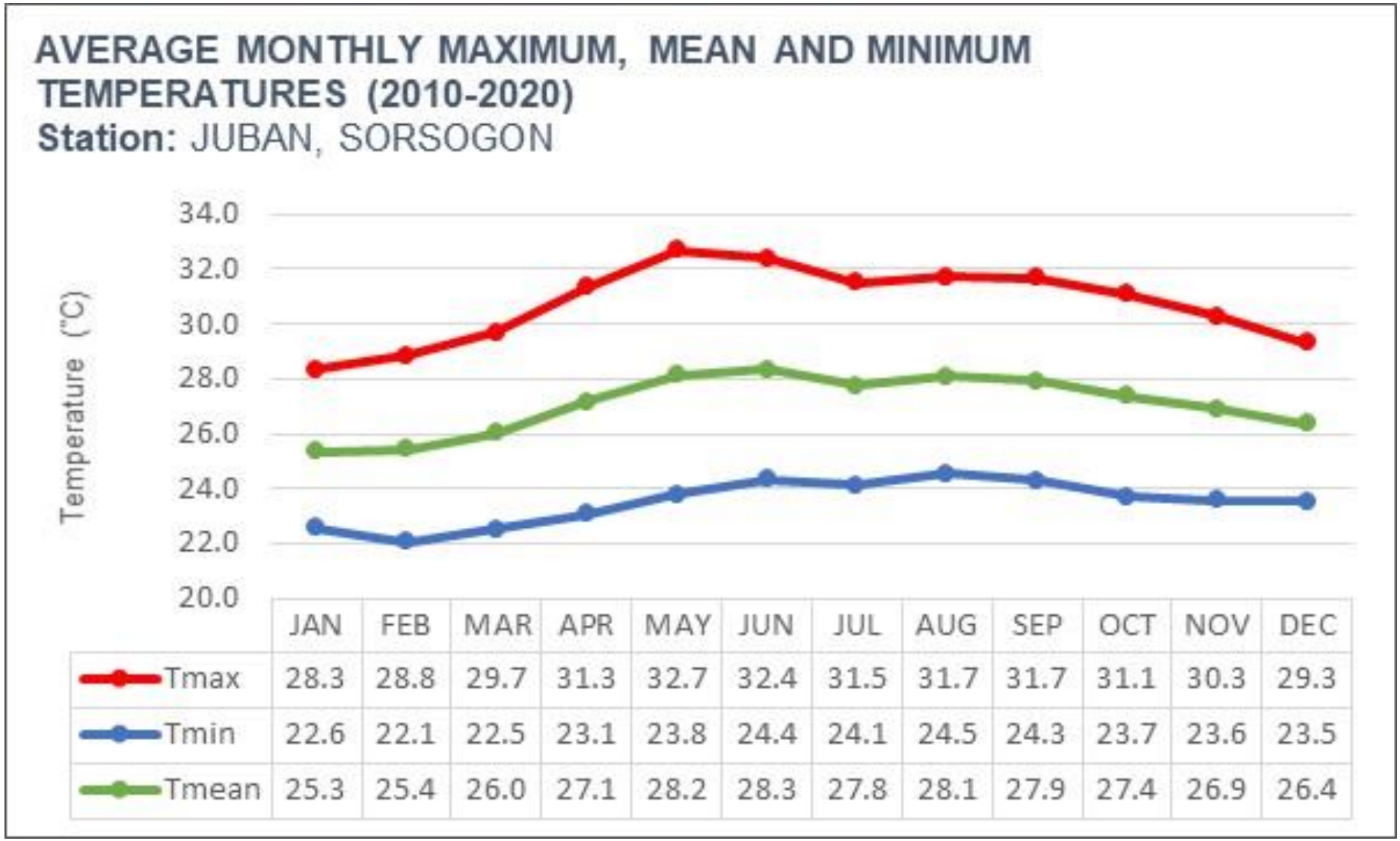
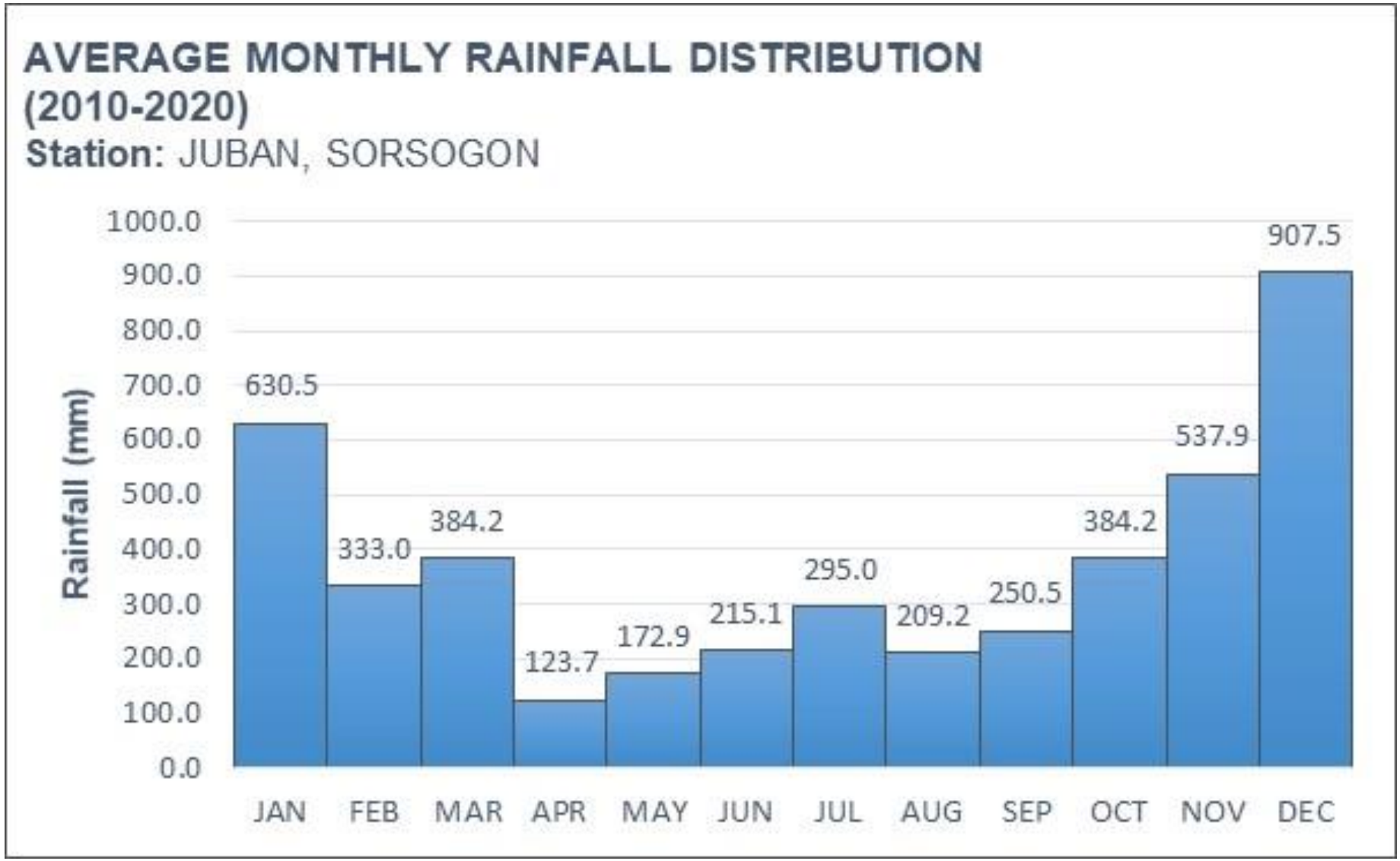


Figure 1. Tracks of Tropical Cyclones Which Crossed the Province of Sorsogon from 1948 to 2020 (PAG-ASA, 2021).

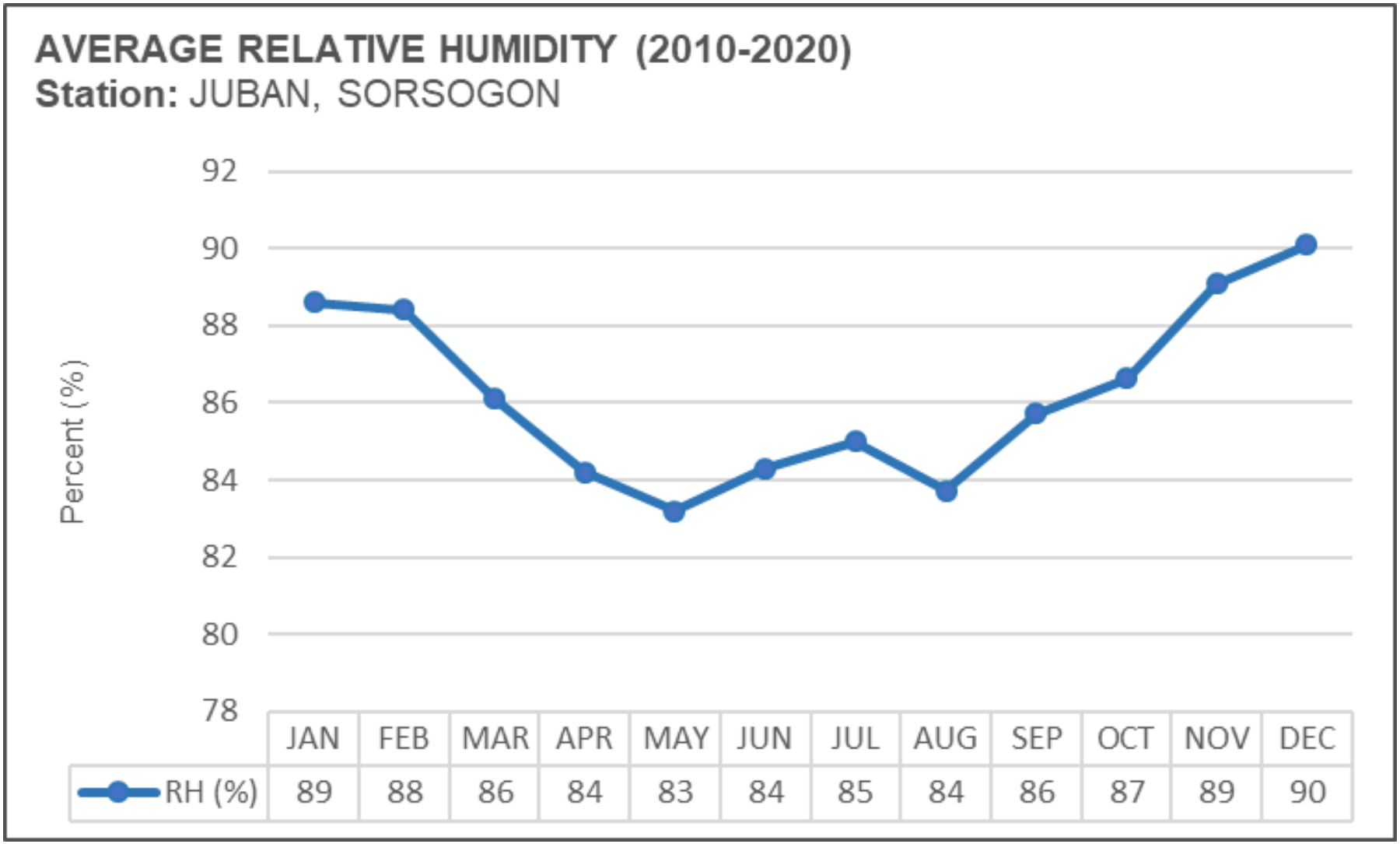


	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Tmax	28.3	28.8	29.7	31.3	32.7	32.4	31.5	31.7	31.7	31.1	30.3	29.3
Tmin	22.6	22.1	22.5	23.1	23.8	24.4	24.1	24.5	24.3	23.7	23.6	23.5
Tmean	25.3	25.4	26.0	27.1	28.2	28.3	27.8	28.1	27.9	27.4	26.9	26.4

Graph 6. Average Monthly Maximum, Mean, and Minimum Temperatures in Sorsogon Province, (PAG-ASA, 2021).



Graph 7. Average Monthly Rainfall Distribution in Sorsogon Province, (PAG-ASA, 2021).



Graph 8. Average Relative Humidity in Sorsogon Province (PAG-ASA, 2021).

F. Natural Hazards and Constraints

With a vulnerability index of 1-30 percent, all barangays of the municipality are vulnerable to El Niño and La Niña phenomena. Aside from these, the municipality also experiences a series of tropical cyclones over its geographical zone.

Based on the study conducted by the MPDO, it is estimated that an area of 1,475.72 hectares, or 13 percent of the total land area, is susceptible to flooding (see Map 8). Of this, 113.72 hectares is regularly to frequently flooded and 312 hectares are occasionally to rarely flooded.

Meanwhile, 1,796 hectares is affected by landslide, broken down as follows: highly susceptible--276.94 hectares; moderately susceptible--81.69 hectares; and lowly susceptible--1,437.37 hectares (see Map 10).

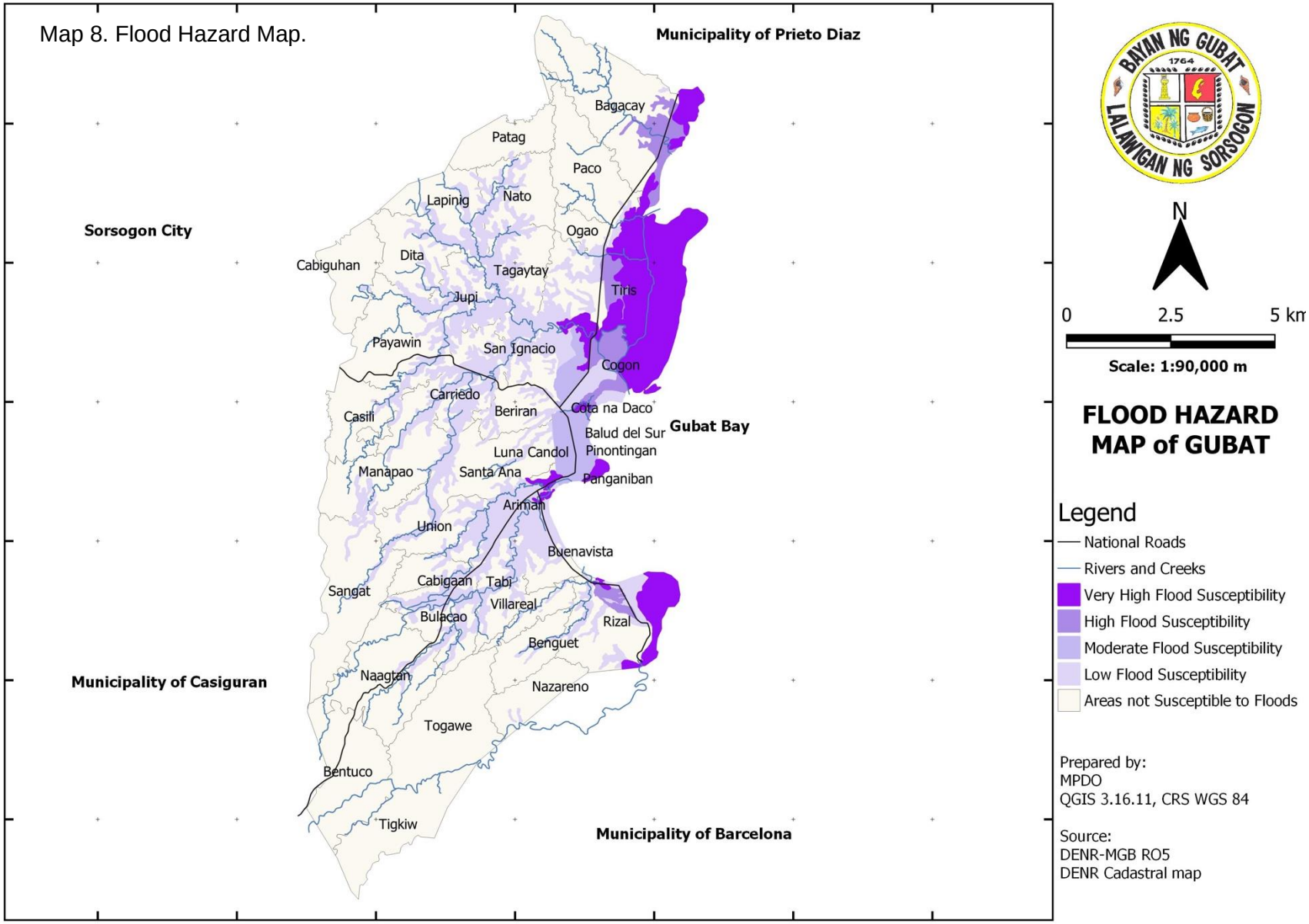
For storm surge, the total area susceptible is 2,111.59 hectares, broken down as follows: high susceptibility--1,945.54 hectares; moderate susceptibility--126.51 hectares; and low susceptibility--39.54 hectares. In case of a tsunami with a wave height of seven meters at the coast, all urban or *poblacion* barangays and 10 coastal barangays will be inundated with a total area of 2,436.51 hectares (see Map 11).

Non-Climate-Induced Hazards

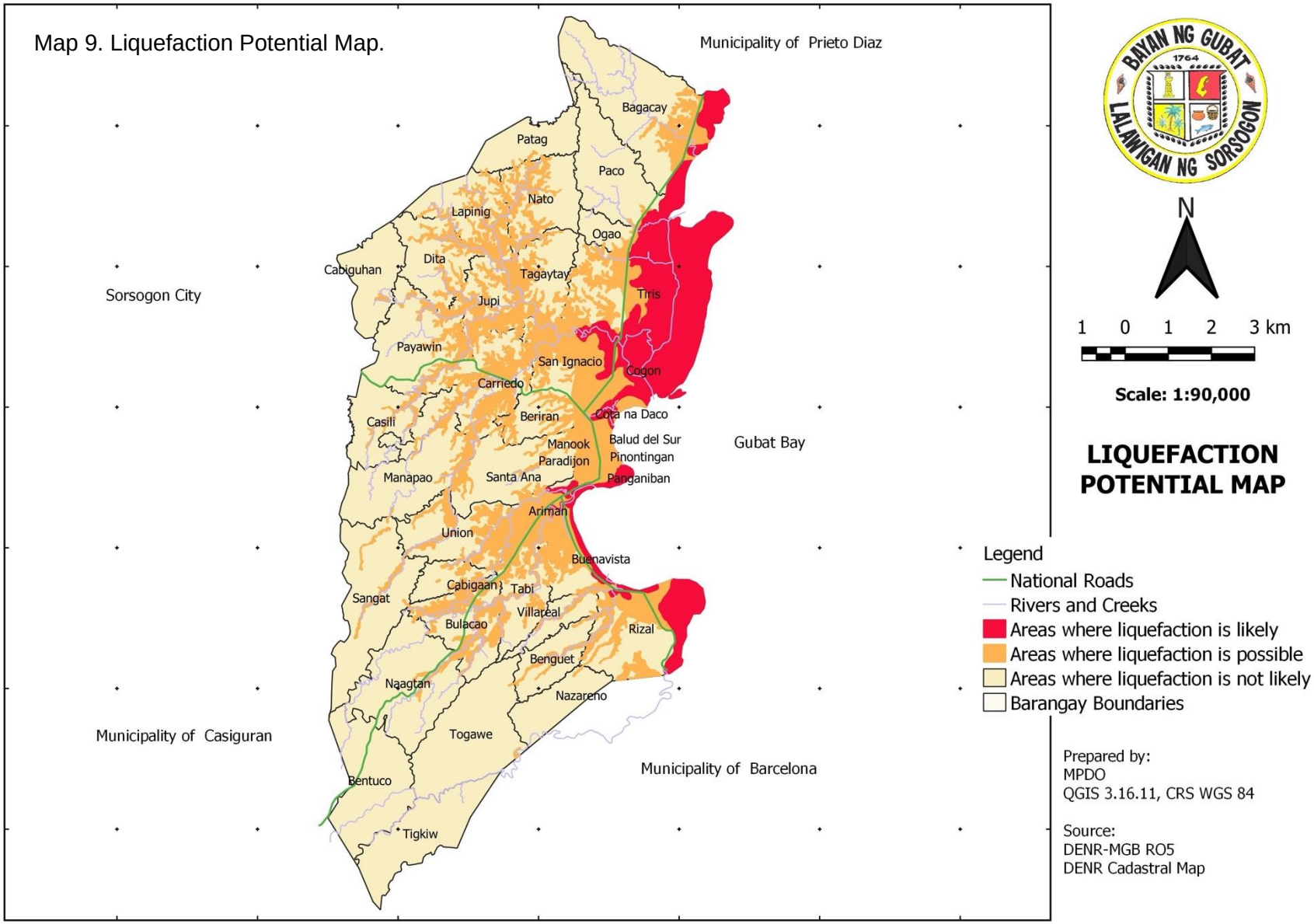
Situated on the convergence of three geologic plates and the San Vicente-Linao fault (Lagmay et al., 2004), Gubat is at risk to earthquakes. Moreover, seismic and volcanic activities of Mt. Bulusan, twenty-nine kilometers from the town center, had caused several tectonic quakes in the past (MDRRMO, 2017).

Due to its proximity to Bulusan, the town is also exposed to volcanic eruptions of Mt. Bulusan--generally known for its sudden steam-driven or phreatic explosion. It has erupted 15 times since 1885 and is considered as the 4th most active volcano in the Philippines (Dela Cruz, 2015; Conway, 2012). Its eruption in 2016 shot two kilometers high of ash lasting for 16 minutes (ABS-CBN News, 2016). Pyroclastic flows affect some southwestern barangays including Tigkiw and portions of Bentuco and Togawe (see Map 13). Meanwhile, lahar flows affect barangays Bentuco, Tigkiw, Togawe, and Rizal, and the Ariman river traversing the barangays of Bentuco, Naagtan, Bulacao, Tabi, Buenavista, and Ariman (see Map14).

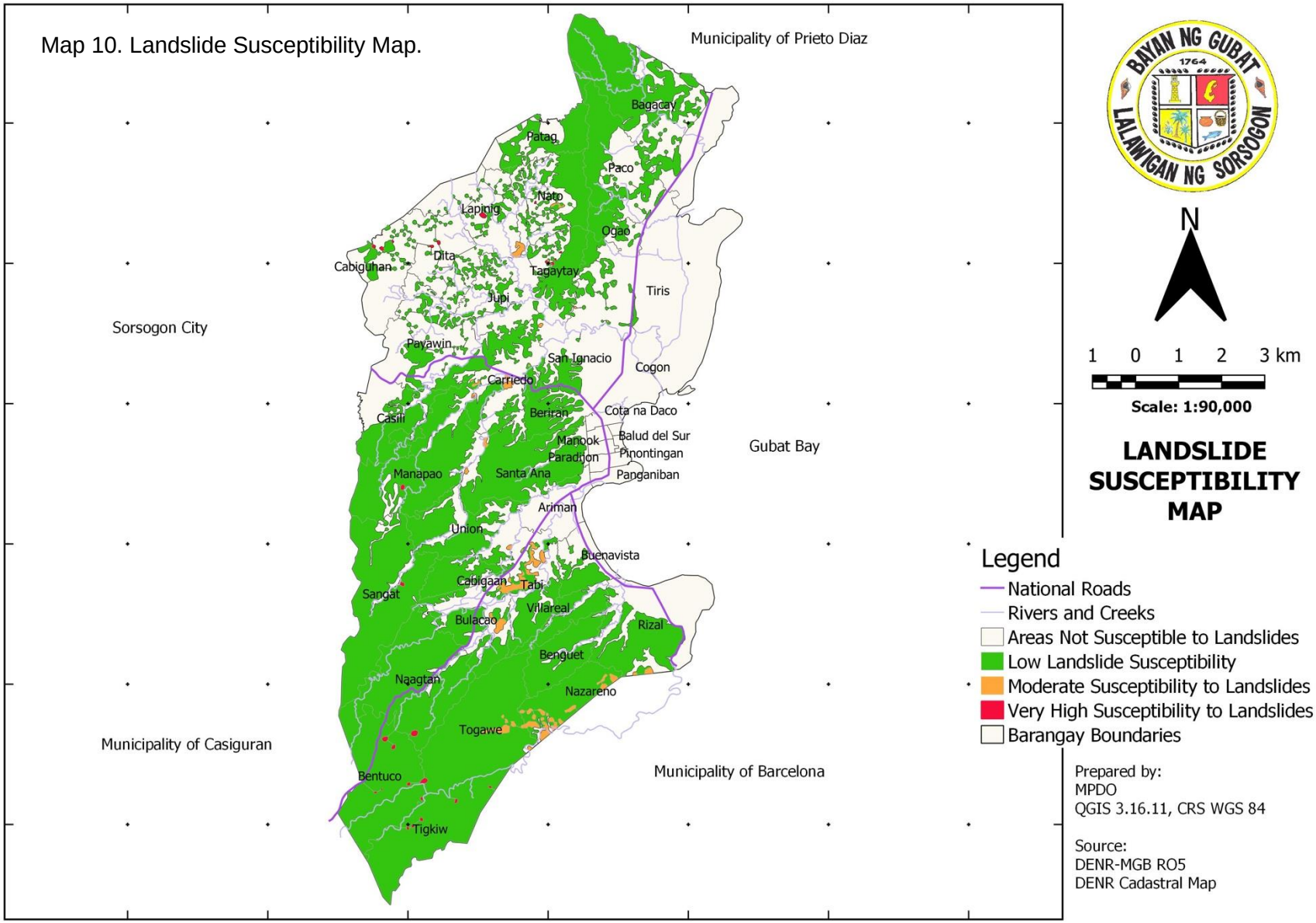
Map 8. Flood Hazard Map.



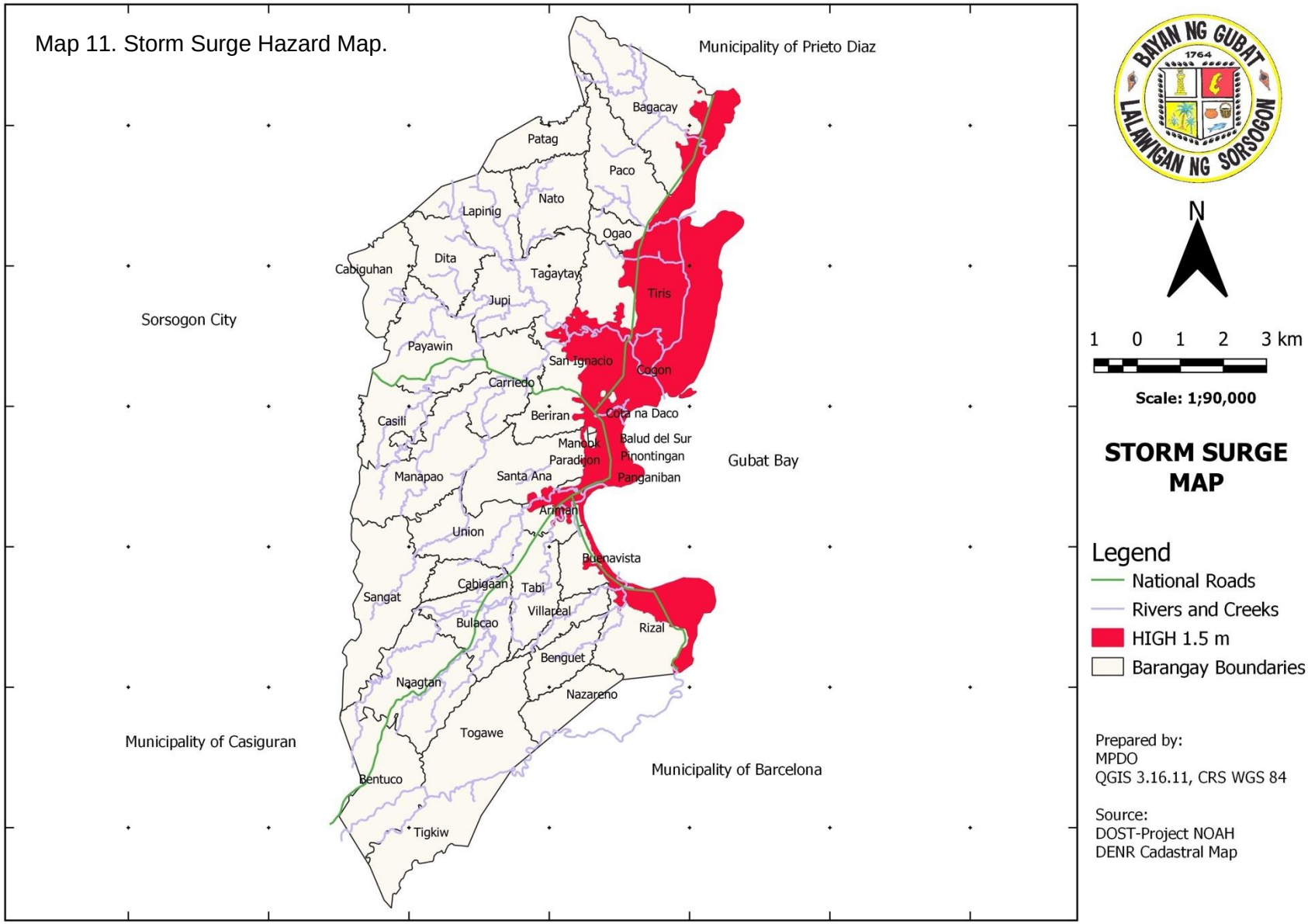
Map 9. Liquefaction Potential Map.



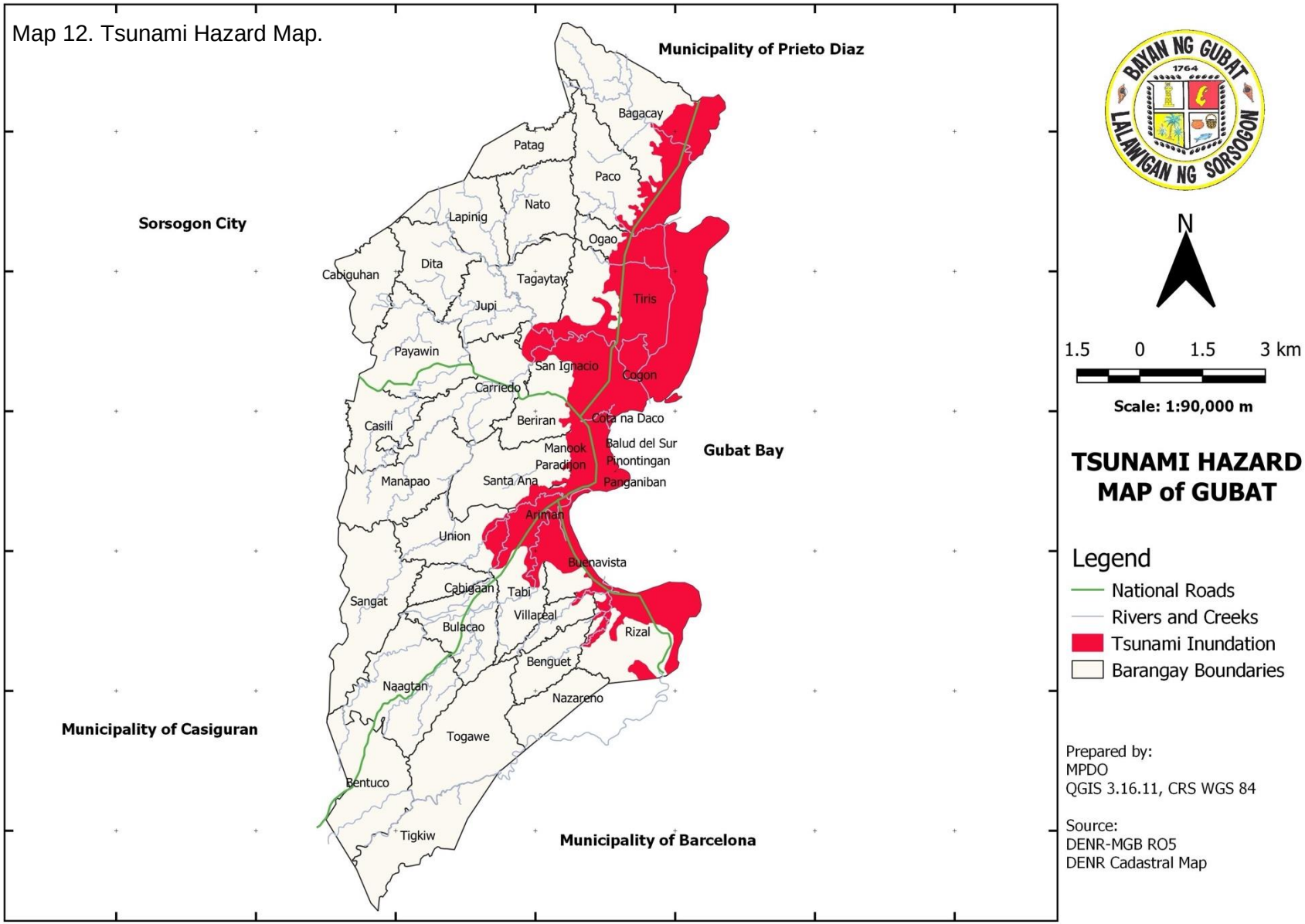
Map 10. Landslide Susceptibility Map.



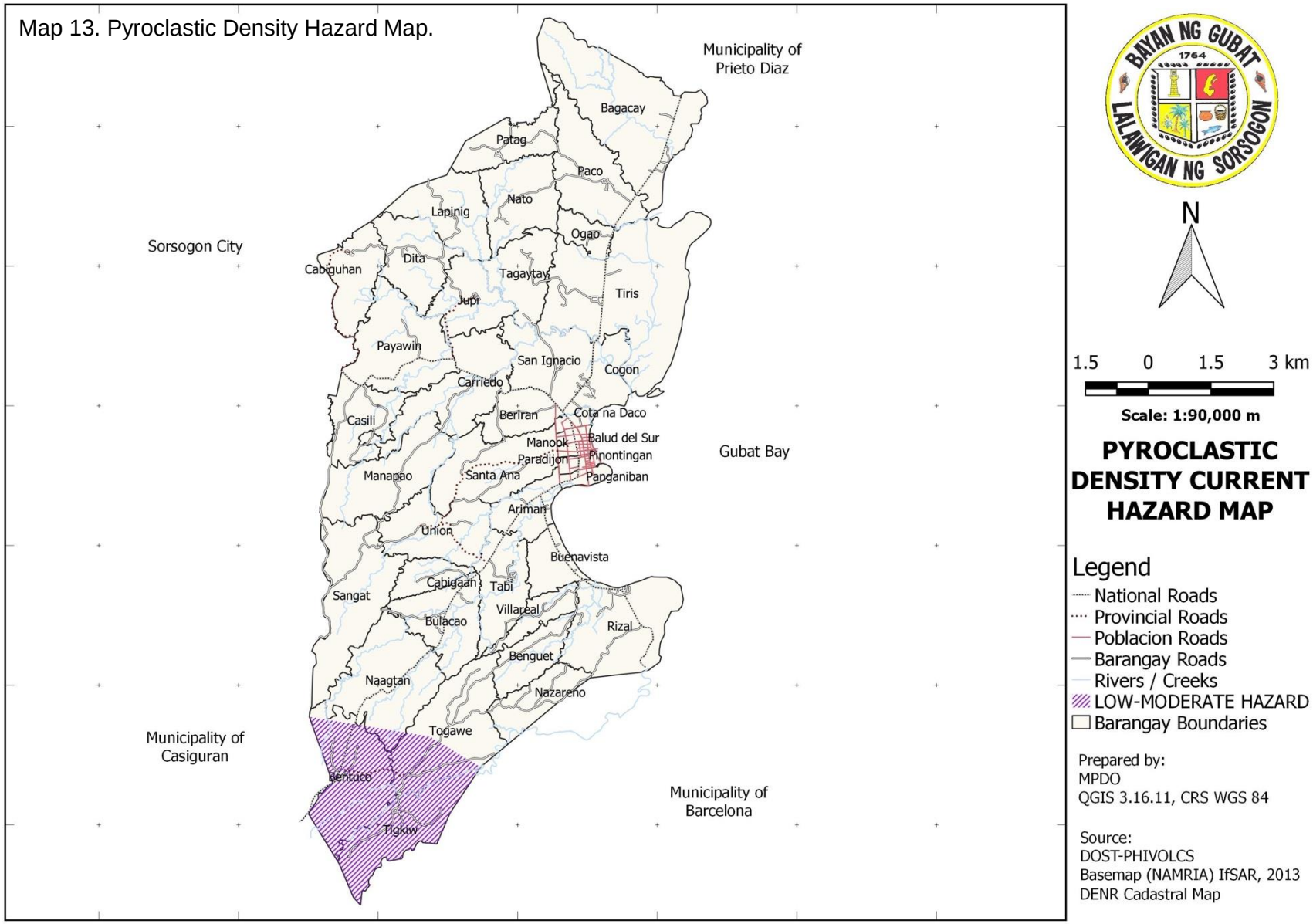
Map 11. Storm Surge Hazard Map.



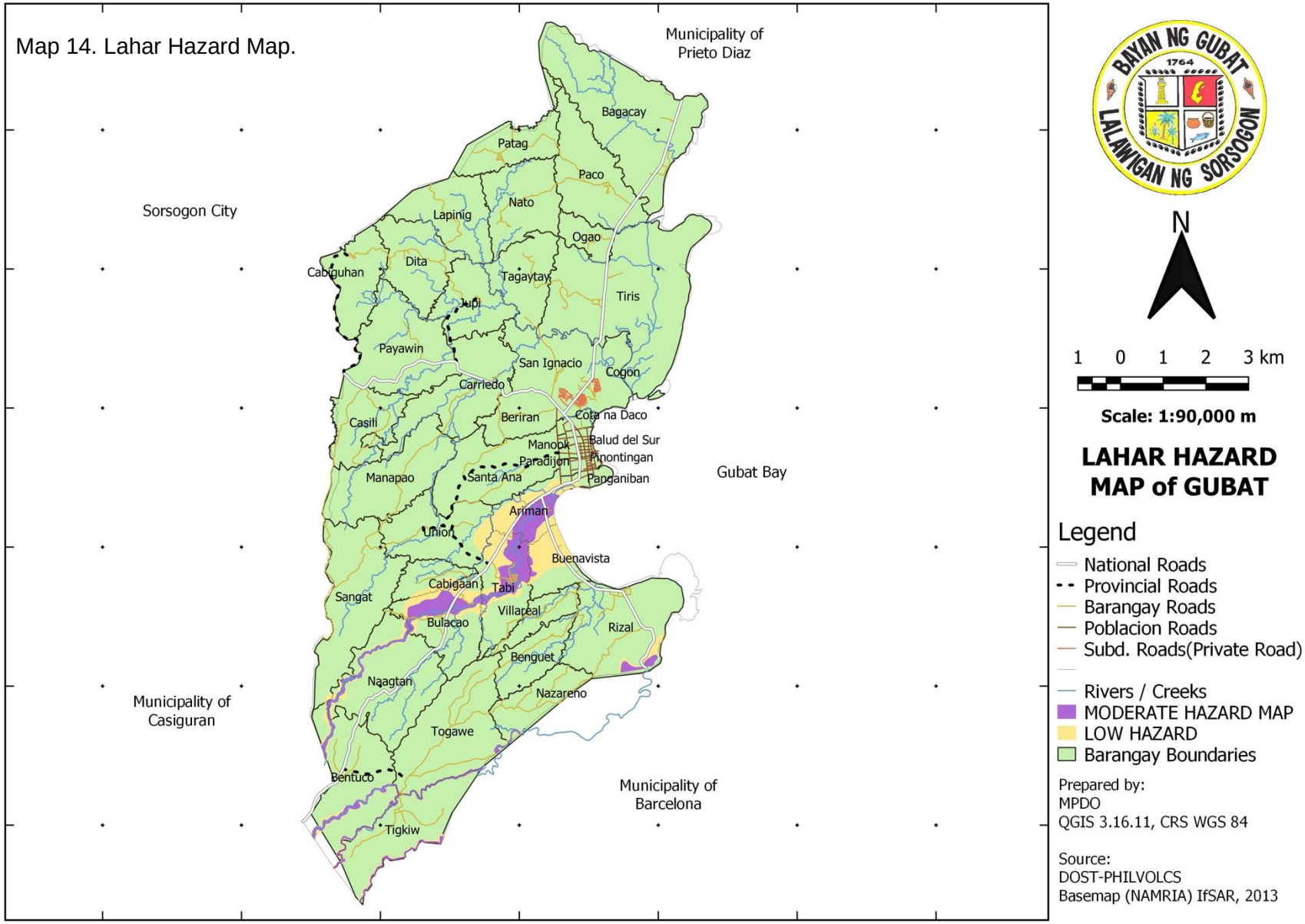
Map 12. Tsunami Hazard Map.



Map 13. Pyroclastic Density Hazard Map.



Map 14. Lahar Hazard Map.



G. Climate Change Vulnerability

Located on the eastern side of Sorsogon facing the Pacific Ocean, Gubat is directly in the path of typhoons and has suffered several destructive ones. Gubat was identified at high risk to climate change events because of its location, its coastal topography (narrow low-lying plains bordered by the ocean and the volcanoes), and the population (largest population center facing the Pacific in the province of Sorsogon). Additionally, because of the presence of rivers, the town is potentially at risk of additional climate stresses, i.e., extreme weather events, changes in precipitation and increase in temperature. Figure 2 shows the projection of sea level rise based on different models and indicates various municipalities of Sorsogon that are prone to this hazard. The projected sea level rise by the year 2100 is more than 0.7 meter, 3 to 5 percent higher than the projected global average.

The climate projections for Gubat were based on the projected changes on temperature and precipitation. The Philippine Climate Extremes Report 2020 of PAG-ASA was analyzed using the Climate Extremes Risk Analysis Matrix (CERAM) tool. The moderate scenario RCP4.5 was used in early (2020-2039), mid (2046-2065), and late (2080-2099) projections as presented in Table 14.

Based on this climate projection, the municipality will experience an increase in temperature across all magnitude (temperature and precipitation) and variables by an average of 1.2 °C and increase of more than 50 days of hot days and warm nights by end of 2099. There will be a significant decrease of 137.6 mm from the 2,801 mm baseline in total wet-day rainfall but slight increase in the maximum 1-day and 5-day rainfall. Longest wet spell will decrease by 2 days but there will be only minimal change on the longest dry spell. Overall, it is expected to have hotter and drier days in the future and while the total rainfall amount will decrease, more intense rainfall events will be observed.

Inherent with the climate stresses are the increased exposures to various hazards like sea level rise, riverine and coastal flooding, rain-induced landslides, prolonged dry spells and strong winds. Projected impacts of climate change on agriculture include decrease in crop yield, increase in post-harvest losses, increase in crop pests and diseases and decrease in livestock production, thereby negatively affecting food security.

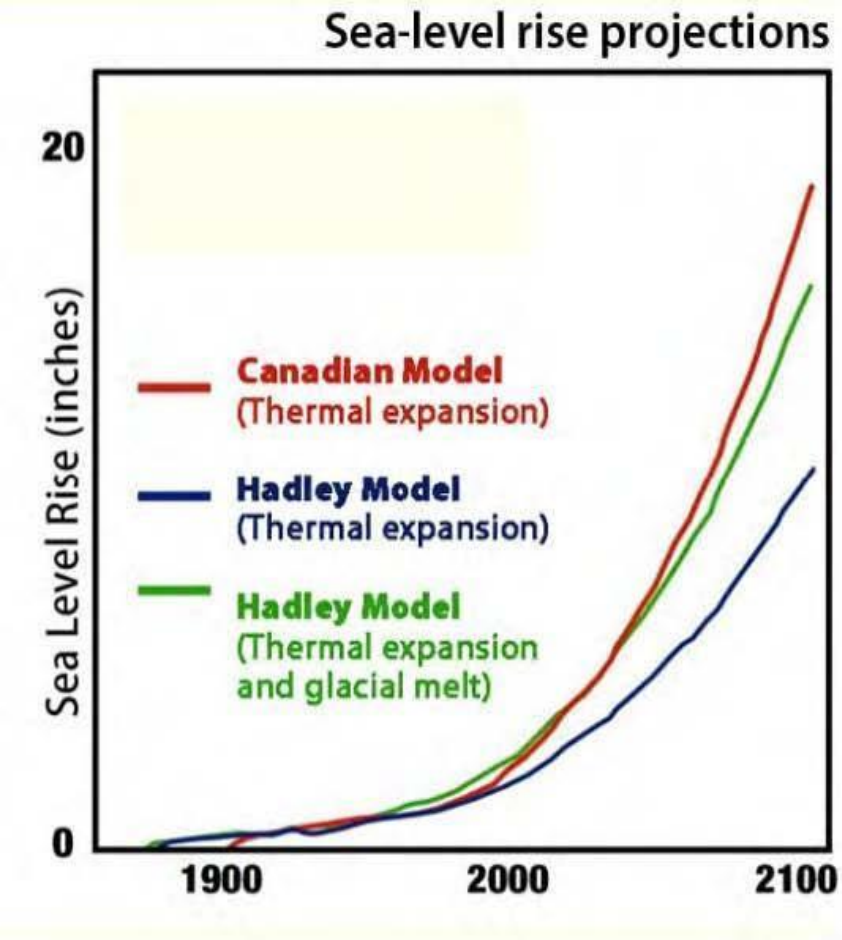
The environment and biodiversity will also be impacted, resulting in extinction of certain species of flora and fauna in a fragile environment. Water use will likewise be affected, including siltation of water bodies, declining water quality, reduction of potable water supply and increased demand in water for use in irrigation. Health impacts include increase in incidence of water- and vector-borne diseases. Extreme weather events will damage social and economic support infrastructures like schools, hospitals, lifelines and other utilities. Human settlements are projected to have increased property damages due to flooding, landslide and storm surge, resulting in increased number of climate-induced casualties and displaced individuals.

Based on marine geological study, Gubat has lost about 70 meters of its shore land to erosion over the past 50 years (World Bank, 2012). Recent results of the Climate and Disaster Risks Assessment (CDRA) show that flooding and landslides in some barangays also affect the town. Natural flooding caused by overflow of adjacent rivers combined with the area's physical characteristics affecting five barangays located on the north-western side of the municipality. It must be noted that the low portions of the *población* experience drainage overflow. Depths of these overflows measure less than one meter and usually subside within an hour. Although these cannot entirely be categorized as flooding, they still pose an obstacle to the normal functions of the affected sections.

In 2008, the World Bank carried out an *in situ* vulnerability assessment to establish which of Gubat's 13 coastal villages were at highest risk and to establish areas of engagement. Adopting the UNDP formula for risk, i.e., Risk = Hazard x Exposure x Vulnerability, the villages of Bagacay and Rizal were found to rank highest in the risk index. Bagacay, with a population of 3,328 in 2015, had a third of its population living within 500 meters of the shoreline. In Rizal, one-fifth of the 2007 population of 2,580 was similarly situated. Villagers living directly behind the seawall were found to be at highest risk. Most of them were fishers whose houses would not withstand strong typhoons, with or without climate change. Found to be at high risk of flooding, in addition to the fishing village, were the elementary school, the village hall, and the health center in Bagacay, which were situated a few meters from the seawall.

The state of physical infrastructure in Bacagay and Rizal also presented potential hazards. The main roads and public buildings lacked drainage that worsened the extent and magnitude of rain-induced flooding. The studies concluded that, given the projected increase in frequency and intensity of typhoons, inaction would exacerbate flooding in these communities.

Figure 2. Sea Level Rise Projection.



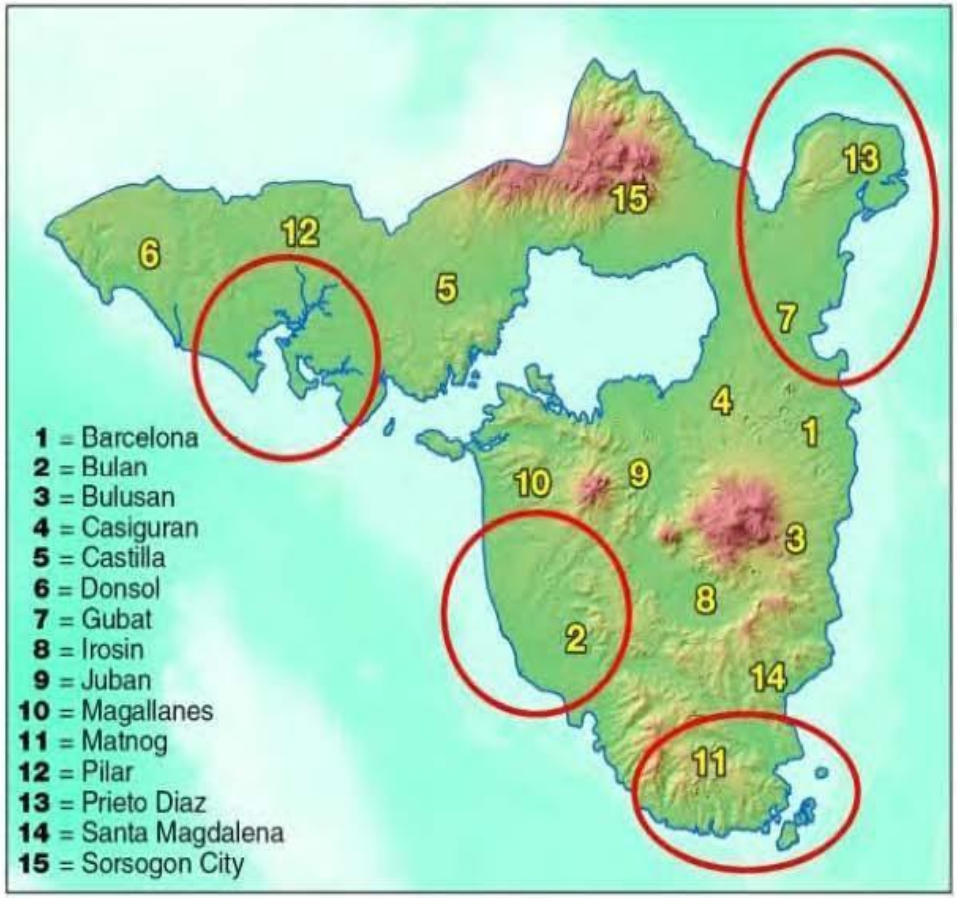


Table 14. Provincial-scale Observed and Projected Climate Extremes in Sorsogon (PAG-ASA, 2020).

	Climate Extreme Indices	Description	Baseline	Scenario	EARLY (2020-2039)		MID (2046-2065)		LATE (2080-2099)		Historical Impacts	Projected Changes in Extremes (LATE)	Potential Impacts of Changes in Extremes	Adaptation Option
					Projected Change		Projected Change		Projected Change					
	CODE				Projected Value	Amt of Change	Projected Value	Amt of Change	Projected Value	Amt of Change				
TEMPERATURE	Magnitude													
	TNn	Coldest night time temperature (°C)	19.8	Moderate Emission (RCP4.5)	20.5	0.7	21	1.2	21.3	1.5	Coldest night temperature is 19.8 °C	1.5 °C increase in coldest night temperature	Drought, dry spell leading to yield reduction, water shortage, heat-driven human and animal diseases, increased morbidity and mortality	Use of heat-resistant crop varieties; utilize solar energy for power source; expansion of irrigation system coverage; technology support on climate change adaptation from the government; Establishment of early warning system; declaration of no build zones; construction of flood preventive and protective structures; use of flood-resistant varieties
	TNm	Average night time temperature (°C)	23.5	Moderate Emission (RCP4.5)	24.1	0.6	24.6	1.1	24.8	1.3	Average night time temperature us 23.5 °C	1.3 °C increase in average night time temperature		
	TNx	Warmest night time temperature (°C)	26	Moderate Emission (RCP4.5)	26.7	0.7	27.1	1.1	27.4	1.4	Warmest night time temperature is 26 °C	1.4 °C increase in warmest night time temperature		
	TXn	Coldest day time temperature (°C)	25.7	Moderate Emission (RCP4.5)	26.4	0.7	26.8	1.1	26.9	1.2	Coldest day time temperature us 25.7 °C	1.2 °C increase in coldest day time temperature		
	TXm	Average day time temperature (°C)	31	Moderate Emission (RCP4.5)	31.6	0.6	32.2	1.2	32.4	1.4	Average day time temperature is 31 °C	1.4 °C increase in average day time temperature		
	TXx	Warmest day time temperature (°C)	34.4	Moderate Emission (RCP4.5)	35	0.6	35.6	1.2	36	1.6	Warmest day time temperature is 34.4 °C	1.6 °C increase in warmest day time temperature		
	DTR	Daily temperature range (°C)	7.5	Moderate Emission (RCP4.5)	7.5	0	7.6	0.1	7.6	0.1	Daily temperature range is 7.5 °C	Minimal change on daily temperature		
	Frequency													

	TN10p	Fraction of cold nights (%)	11.4	Moderate Emission (RCP4.5)	3.1	-8.3	1.4	-10	0.7	-10.7	Cold nights occur from 41 to 42 days	10 to 11 days decrease in number of cold nights	Flooding, rain-induced landslide resulting to agriculture loss, damages on structures, disruption in mobility of goods and services, increased water-borne diseases	
	TN90p	Fraction of warm nights (%)	11.4	Moderate Emission (RCP4.5)	35.4	24	58	46.6	70.3	58.9	Warm nights occur from 41 to 42 days	58 to 59 days increase in number of warm nights		
	TX10p	Fraction of cool days (%)	11.3	Moderate Emission (RCP4.5)	3.5	-7.8	1.6	-9.7	1.1	-10.2	Cool days occur from 41 to 42 days	10 to 11 days decrease in number of cool days		
	TX90p	Fraction of hot days (%)	11.3	Moderate Emission (RCP4.5)	30.1	18.8	56.7	45.4	68.5	57.2	Hot days occur from 41 to 42 days	57 to 58 days increase in number of hot days		
	Duration													
	WSDI	Warm Spell Duration Index (days)	3.9	Moderate Emission (RCP4.5)	66.3	62.4	203.3	199.4	284.1	280.2	The number of days contributing to warm periods is 66 to 67 days.	280 days increase in number of days contributing to warm period		
PRECIPITATION	Magnitude													
	PRCPTOT	Total wet-day rainfall (mm)	2801	Moderate Emission (RCP4.5)	2712.2	-88.8	2783.5	-17.5	2663.4	-137.6	Total wet-day rainfall of 2801 mm is mostly due to occurrences of tropical cyclones, tail end of the cold front, thunderstorms, ITCZs, and first half of Amihan	137.6 mm decrease in total wet-day rainfall	Water shortage in irrigation and domestic consumption, reduced agricultural yield	

											season. These events trigger flooding in floodplains mostly ricefields.			
	SDII	Average daily rainfall intensity (mm/day)	12.8	Moderate Emission (RCP4.5)	12.5	-0.3	12.7	-0.1	12.2	-0.6	Average daily rainfall is 12.8 mm/day. Short duration rainfalls pose flooding and landslide hazards to low-lying and catchment areas.	0.6 mm decrease in average daily rainfall		
	Rx1day	Maximum 1-day rainfall total (mm)	121.8	Moderate Emission (RCP4.5)	125.8	4	132.3	10.5	130.7	8.9	Maximum 1-day rainfall is 121.8 mm and reached or might even be surpassed in the event of tropical cyclones and continuous heavy rainfall during the tail end of the cold front, causing river overflows and agricultural losses.	8.9 mm increase in maximum 1-day rainfall	Flooding, rain-induced landslide resulting to agriculture loss, damages on structures, disruption in mobility of goods and services, increased water-borne diseases	

	Rx5day	Maximum 5-day rainfall total (mm)	264	Moderate Emission (RCP4.5)	270.7	6.7	300.5	36.5	264.6	0.6	Maximum 5-day rainfall is 264 mm. Recent prolonged flooding were triggered by TECF and submerged portions of roads and hiways, rice paddies, fish ponds, and few housing units.	0.6 mm increase in maximum 5-day rainfall		
	P95	Rainfall on very wet days (mm)	41.7	Moderate Emission (RCP4.5)	41.5	-0.2	42.5	0.8	40.9	-0.8	Rainfall on very wet days totals to 41.7 mm. This triggers flooding in low-lying areas.	0.8 mm decrease in amount of rainfall on very wet days	Water shortage in irrigation and domestic consumption , reduced agricultural yield	
	P99	Rainfall on extremely wet days (mm)	86.9	Moderate Emission (RCP4.5)	85.6	-1.3	85.2	-1.7	87.2	0.3	Rainfall on extremely wet days reaches 86.9 mm and flooded slightly elevated areas near river channels.	0.3 mm increase in rainfall on extremely wet days	Flooding, rain-induced landslide resulting to agriculture loss, damages on structures, disruption in mobility of goods and services, increased water-borne diseases	
	R95p	Total rainfall from very wet days (mm)	751.3	Moderate Emission (RCP4.5)	752.8	1.5	784.7	33.4	758	6.7	Total rainfall from very wet days is at 751.3mm which are mostly due to typhoons, TECF, and monsoon events causing	6.7 mm increase in total rainfall from very wet days		

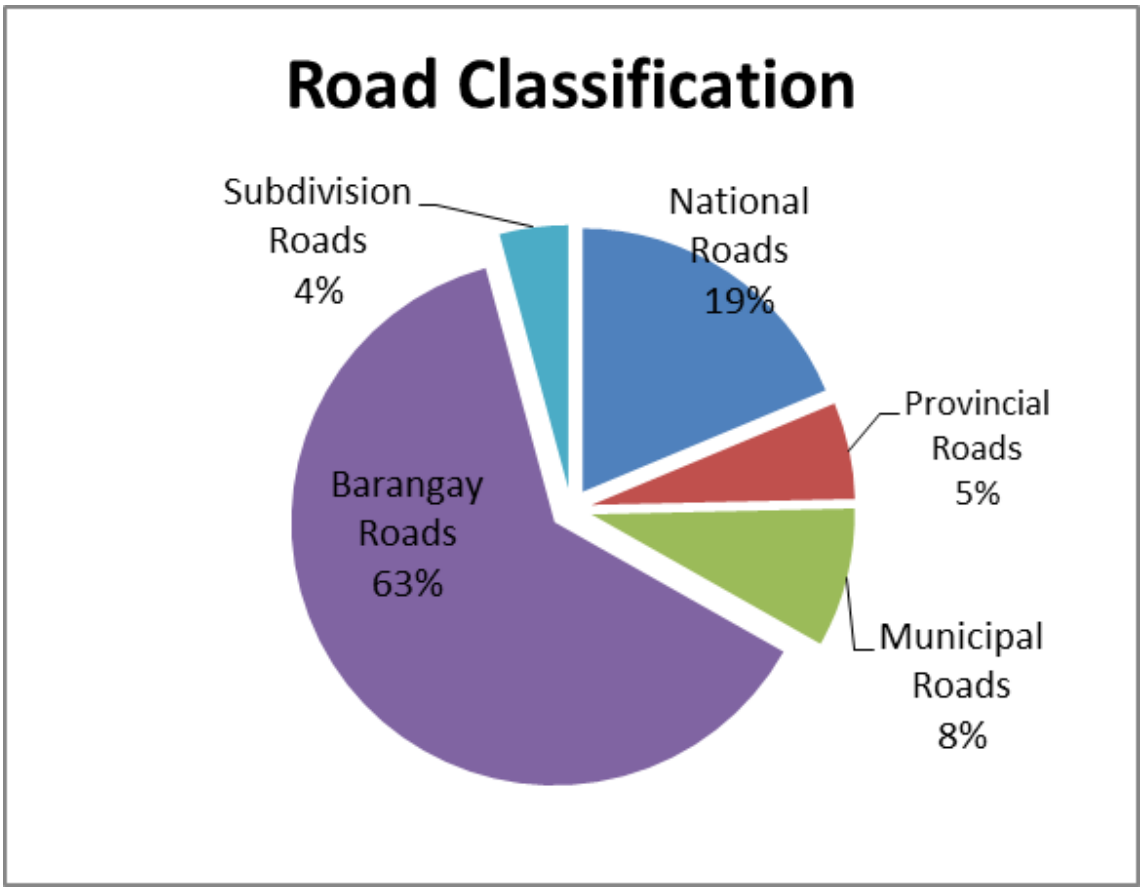
											agricultural damages due to flooding.			
	R99p	Total rainfall from extremely wet days (mm)	247.2	Moderate Emission (RCP4.5)	260.1	12.9	262.8	15.6	255.8	8.6	Total rainfall from extremely wet days is at 247.2mm and mostly due to typhoons, monsoon rains, and TECF continuous heavy rainfall.	8.6 mm increase in total rainfall from extremely wet days		
	Frequency													
	P95d	Number of very wet days (days)	10.8	Moderate Emission (RCP4.5)	10.6	-0.2	11.1	0.3	10	-0.8	The number of very wet days is 10 to 11 which is characterize d by flooding in low-lying areas and disrupts mobility of goods and services and leads to agricultural losses.	1 day decrease in the number of wet days	Same risks at present may continue in the future.	
	P99d	Number of extremely wet days (days)	2.2	Moderate Emission (RCP4.5)	2.2	0	2.1	-0.1	2.2	0	There are 2 to 3 extremely wet days which caused flooding in low-lying areas.	No change in the number of extremely wet days		
	Duration													

	CWD	Longest wet spell (days)	20.5	Moderate Emission (RCP4.5)	20.3	-0.2	19.4	-1.1	18.4	-2.1	The longest wet spell is 20 to 21 days causing flooding in low-lying areas.	2 to 3 days decrease in the longest wet spell		
	CDD	Longest dry spell (days)	15.2	Moderate Emission (RCP4.5)	15.2	0.4	15	-0.2	14.4	-0.8	The longest dry spell is 15 to 16 days which leads to drying up of natural springs and difficulty in sourcing irrigation water.	1 day decrease in the longer dry spell		

III. INFRASTRUCTURE, FACILITIES, AND UTILITIES

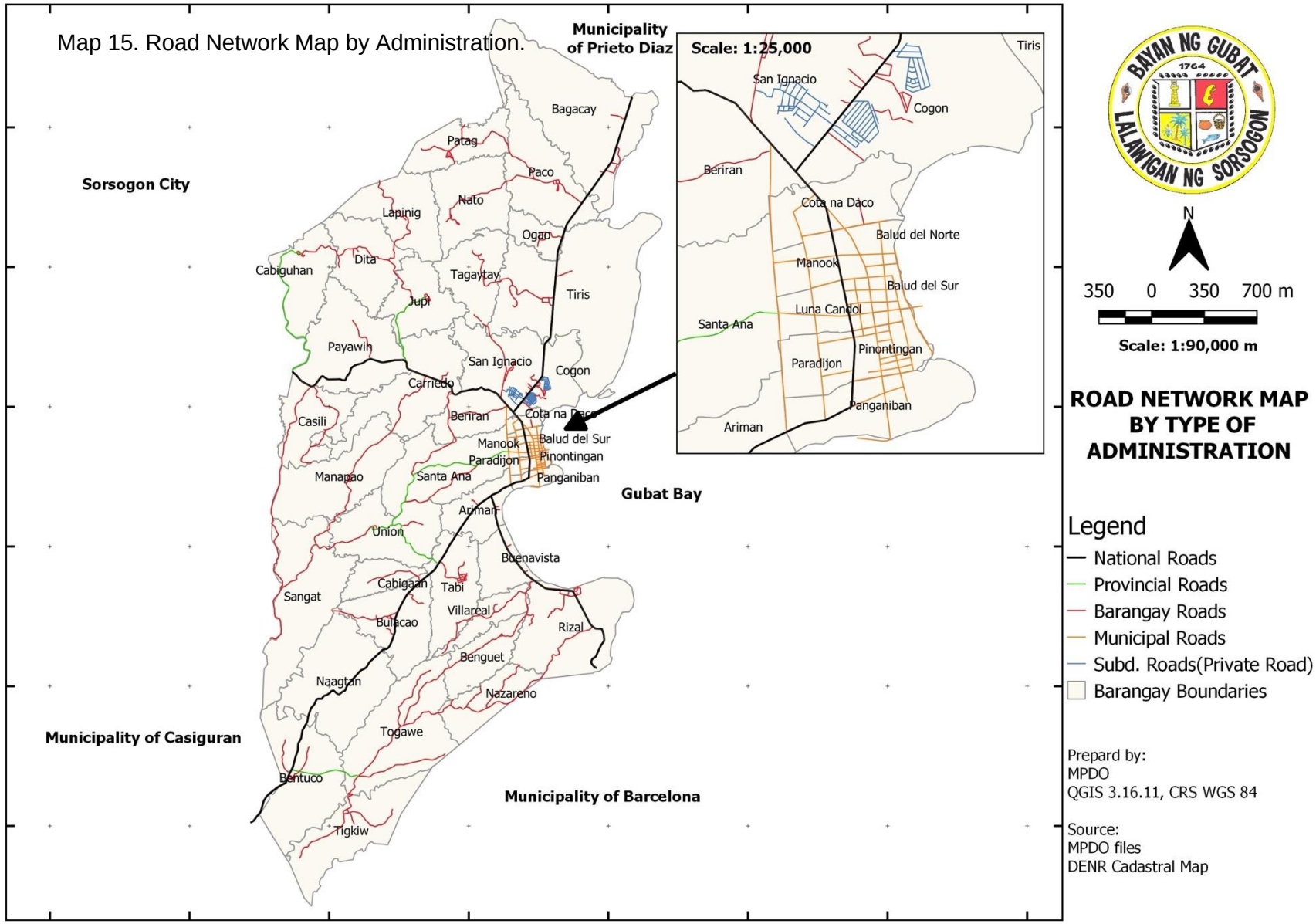
A. Transportation and Road Network

The existing road network of Gubat provides access to the urban center from all rural barangays. A tertiary national road is the main road artery linking Gubat to adjacent municipalities and other places in the country. The existing roads are classified into national, municipal, barangay and subdivision roads (see Graph 9). The national tertiary road has a total length of 32.72 kilometers covering the four stretches: (1) Junction Abuyog-Gubat-Ariman, (2) Junction Ariman-Bentuco-Casiguran, (3)Junction Gubat-Prieto Diaz; and, (4) Junction Ariman-Bulusan. The existing municipal roads within the *poblacion* area have a total length of 14.95 kilometers, while provincial roads traverse 10.38 kilometers. Roads classified as barangay roads have a total length of 109.49 kilometers. Subdivision roads have a total length of 5.21 kilometers. The total length of the road network in the municipality is 172.75 kilometers (See Map 15 and 16).

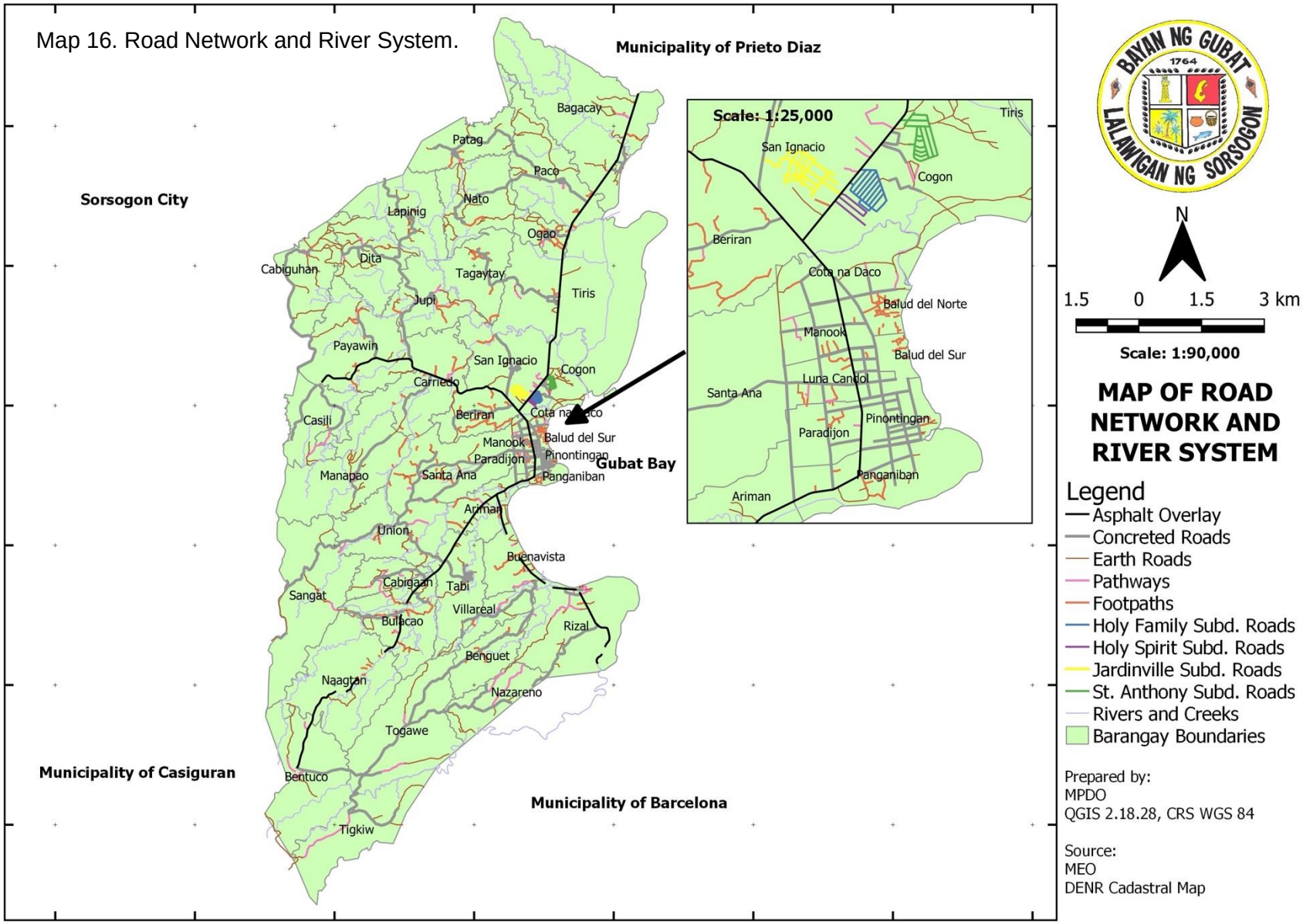


Graph 9. Road Classification.

Over ninety percent (90%) of the roads in Gubat are Portland Cement Concrete Pavement (PCCP). Except for barangay roads where gravel and earth surfaces comprise less than 10 percent of the total length, all the municipal roads, provincial roads, and tertiary national roads are PCCPs. A little over 22 kilometers or 76.25 percent of the tertiary national roads is covered with asphalt overlay.


Map 15. Road Network Map by Administration.
Municipality of Prieto Diaz
Sorsogon City
Municipality of Casiguran
Municipality of Barcelona
Gubat Bay
Bagacay
Patag
Paco
Nato
Lapinig
Ogao
Cabiguhan
Dita
Tagaytay
Tiris
Jupi
Payawin
San Ignacio
Cogon
Carriedo
Beriran
Cota na Daco
Casili
Manook
Balud del Sur
Paradijon
Pinontingan
Manapao
Santa Ana
Panganiban
Ariman
Union
Buenavista
Cabigaan
Tabi
Sangat
Villareal
Bulacao
Rizal
Benguet
Naagtan
Nazareno
Togawe
Bentuco
Tigkiw
Scale: 1:25,000
Tiris
San Ignacio
Cogon
Beriran
Cota na Daco
Balud del Norte
Manook
Balud del Sur
Santa Ana
Luna Candol
Pinontingan
Paradijon
Panganiban
Ariman
BAYAN NG GUBAT
1764
LALAWIGAN NG SORSOGON
N
350 0 350 700 m
Scale: 1:90,000 m
ROAD NETWORK MAP BY TYPE OF ADMINISTRATION
Legend
National Roads
Provincial Roads
Barangay Roads
Municipal Roads
Subd. Roads(Private Road)
Barangay Boundaries
Prepard by:
MPDO
QGIS 3.16.11, CRS WGS 84
Source:
MPDO files
DENR Cadastral Map

Map 16. Road Network and River System.



There are a total of eleven (11) bridges in the municipality made of concrete with asphalt overlay. These bridges are located along national roads with load capacity from ten (10), fifteen (15), and twenty (20) tons.

For inter-barangay mobility of people and produce, the main modes of transportation are trimobiles, jeepneys, and light trucks. In the town proper, trimobiles dominate the main thoroughfares. Land transportation facilities in Gubat include a public transport terminal for jeepneys, mini buses and the booking offices and pick up stations for buses. Trimobiles generally utilize portions of municipal streets for parking, while there are private garages also for some jeepneys, mini bus cooperative and bus companies. There are four gas refilling stations. A significant number of automotive and vulcanizing shops for vehicle repair are available.

Gubat is located two hours away from the regional airport in Legazpi City, and can be reached mostly through land transport from Manila by bus, which takes about 12 hours. There are several bus companies that operate daily from Manila to Gubat and vice versa: Alps, JVH Transport/Pamar, Elavil Tours Phils. Inc., St. Jude Transit, Raymond Transport, CUL Transport, DLTB Co, Penafrancia Tours/RSL/Isarog, and Philtranco.

There are also jeepneys that provide transportation to Sorsogon City, Bulusan, Barcelona, Prieto Diaz and local barangays like Nato, Tigkiw, and Bentuco.

B. Administrative Infrastructures

Several government buildings are established in the municipality. Located within the municipal compound in Barangay Pinontingan including are the Municipal Buildings A and B that house the executive and legislative departments of the local government of Gubat, the Municipal Disaster Risk Reduction and Management Office (MDRRMO), and the Rural Health Unit (RHU).

Other National Government Agencies (NGAs) with offices within the municipal compound are Municipal Circuit Trial Court (MCTC), Regional Trial Court (RTC), Gubat Municipal Police Station, Philippine Postal Corporation (PhilPost), Commission on Audit (COA), Bureau of Internal Revenue (BIR), Department of the Interior and Local Government (DILG), Department of Agrarian Reform (DAR),and the Bureau of Jail Management and Penology (BJMP).

Meanwhile, other offices are currently housed on a municipal lot along Highway 59 in Barangay Ariman. These include the slaughterhouse, TB DOTS, Bureau of Fire Protection (BFP), GUFADECO building, and the Day Center of the Senior Citizens. The Materials Recovery Facility (MRF) is just across the street from the slaughterhouse. It is located in Barangay Panganiban.

Several other buildings were constructed and are being maintained by the municipal government. These include the Andaya Multipurpose Gymnasium, Municipal Childhood Development Center, Cerebral Palsy Space (CEPAS), Encinas Pavilion, and the Gubat Public Market.

Moreover, each barangay has a barangay hall, which serves as the seat of government at the barangay level.

C. Water

The water facilities in Gubat are categorized into Level I, Level II, and Level III water supply systems. Of the 13,471 households per (RCBMS,2016), 17 percent are with Level I water supply system, 214 households with own use tubed/piped deep well, 2,176 using shared tubed/piped deep well, 146 using tubed/piped shallow well, 248 using dug well, 2,019 from protected springs, 581 from unprotected springs and 12 from lake/river/rain/others. About 12.6 percent or 1,695 of the total household have access to Level II water systems operated by barangay LGUs.

The only water service provider in the municipality, the Gubat Water District (GWD) under the Local Water Utility Administration (LWUA), is responsible in delivering service of potable water. In 2020, there are 6,733 total connections from domestic, commercial, industrial and institutional use in Level III Water Supply alone. As per GWD data, annual water production was accounted 1,700,209 m^3 or 4,658.10 m^3 daily production. It is then inferred that the current volume of water produced is more than enough for the 2,932 m^3 volume of water required daily for 33,665 total population GWD is currently serving. However, the present level of unaccounted-for-water is approximately 37 percent of the total production. High percentage of this is due to leaking joints, pipe bursting and illegal connections. By 2022, service connection is projected to increase to 7,374 and 9,294 in 2030. It will serve around 55,764 residents and around 20,000 tourists.

Water generated by GWD covers thirty-eight (38) barangays of the municipality. Eight (8) barangays in the poblacion and rural barangay of Cogon in north and Ariman, Buenavista and Rizal in the south are solely dependent on Kadaop Spring. The rest of the barangays have their own water pumping system run by the GWD that augments the demand of each household. Four (4) barangays including Dita, Casili, Lapinig and Cabiguhan are not covered by the GWD services. Households in these barangays still use Level I and Level II water supply such as unprotected sources of water through a combination of peddlers, dug wells, river and stream, and rain.

D. Power

Electricity is distributed to all 42 barangays by the Sorsogon II Electric Cooperative (SORECO II). There are a total of 13,106 connections in the municipality, of which 12,325 are residential, 469 are commercial, 2 are industrial, 291 are public buildings, and 19 for street lighting. The current cost of electricity is PHP 9.8352 per kilowatt hour for residential; PHP 7.5456 for low voltage, and PHP 6.4058 for higher voltage industries. About 87 percent of households have electrical connections according to the RCBMS data in 2016. There are twenty-seven (27) barangays with more than 10 percent of households still unserved with electricity. It comprises 13 percent of the total number households or 1,702 households both from urban and rural areas of Gubat.

E. Communications Network

Access to information and communication technology is provided by DCTV Cable Network, Smart-PLDT, and Globe telecommunications companies. Services available are voice and video calls, SMS, and 4G/LTE internet data. DCTV Cable Network and Halum Properties, Inc. (HalProp cable) operate and provide cable television service. Satellite television services are also available, such as Cignal, Global Satellite (GSat) and Dream. Gubat has one local radio station, the DWPS-FM station. Signals from other AM and FM stations outside Gubat are also received. Government two-way radio communications are available for local emergency response and protective services. Philippine Postal Corporation (PhilPost) provides postal services, while local LBC, J&T, and JRS branches provide courier services.

F. Social Services Facilities

Education

Gubat has a complete range of learning institutions from preschool to tertiary schools. There are four private pre-schools and 47 public preparatory schools; 39 publics and two private elementary schools; two private and six public secondary schools with junior and senior high school levels except for Bentuco National High School which has no senior high school level; one technical-vocational school and one tertiary school. One of the private schools has pre-school, elementary, and secondary levels.

The 47 public preparatory schools are child development centers, formerly known as day care centers. There are five barangays that have two child development centers each. Of the 47 centers, two are run by the municipal government. The total child development center enrolment for School Year (SY) 2019 was 1,241, where 605 were males and 636 were females.

Elementary education is provided by 41 private and public schools. All rural barangays each have one public school with one private school located in San Ignacio, while four public and one private elementary schools are in the *poblacion* area. The aggregated land area for school campuses is 38.85 hectares. With regard to facilities, there is a total of 334 classrooms in public and private elementary schools. For (SY) 2017-2018, the total enrolment in public and private elementary schools was 8,607, where 4,612 were males and 3,995 were females. The classroom-student ratio was 1:26.

There are six public and two private secondary schools with junior and senior high school levels. These schools occupy a total land area of 18.744 hectares. The total enrolment for SY 2017-2018 was 7,538, with Gubat National High School (GNHS) accounting for 4,613 enrollees. With a total of 138 classrooms in both private and public secondary schools, the classroom-to-student ratio in SY 2017-2018 was 1:55.

Database Technology College, Inc. offers senior high and technical courses. Bicol University Gubat Campus (BUGC) is a public tertiary school in the municipality, which also caters to students from other municipalities and nearby provinces.

A two-storey building houses the Gubat Public Library located beside the BUGC. Meanwhile, of the 39 elementary schools, only 6 have libraries.

The general population of 10 years and older generated a literacy rate of 99 percent (see Table 15).

Table 15. Literacy Rate, 2015.

Indicator	Male		Female		Both Sex	
	No.	Rate %	No.	Rate %	No.	Rate %
Literate	23,416	99	23,267	99	46,683	99
Illiterate	208	1	224	1	432	1
Total (Population >10yr)	23,624	100	23,491	23,624	47,115	100

Source: PSA

Health and Sanitation

Gubat has a hospital operated and managed by the provincial government of Sorsogon. The Salvador R. Encinas District Hospital is a 25-bed hospital serving the constituents of Gubat and the municipalities of Barcelona, Bulusan, and Prieto Diaz. It provides services such as medicine, pediatrics, obstetrics and gynecology for normal deliveries only, minor surgery, laboratory, radiology, pharmacy, dental, dietary and outpatient consultation.

The Rural Health Unit (RHU) is under the administration and technical supervision of the Local Government Unit. It is composed of the main health center, Tuberculosis Directly-Observed Treatment Strategy (TB-DOTS) Center, and the Barangay Health Stations in the 42 barangays. The Barangay Health Stations are managed and supervised by the municipal midwives with assigned catchment areas. The RHU provides services such as outpatient consultation, birthing home for normal deliveries, *Doktora sa mga Barangay* program, TB-DOTS, pediatrics, minor surgery, laboratory, medico-legal, drug dispensary, and ambulance service.

There are also private clinics in the municipality: five (5) of which are dental clinics, three (3) laboratories, nine (9) medical clinics, two (2) pediatrics, one (1) OB-GYN clinic, and one (1) dialysis clinic. There are seven (7) private drugstores and three (3) funeral parlors. These are all located in the poblacion, serving not only the residents of Gubat, but also residents from the adjacent towns of Barcelona, Prieto Diaz, Bulusan, and Casiguran.

In 2018 the crude birth rate was 14.94 percent while the crude death rate was 5.77 percent. The top three leading causes of morbidity for the same year were acute respiratory infection, upper respiratory infection, and hypertension. On the other hand, the top three causes of mortality were atherosclerotic cardiovascular disease, acute myocardial infarction, and cancer (all types). There was a continued rise of non-communicable and lifestyle-related diseases along with the existing prevalence of infectious diseases. Malnutrition incidence in 2018 listed 282 underweight, 64 severely underweight, and 65 overweight children aged zero to 71 months.

There are four cemeteries in the municipality, namely, Gubat Catholic Cemetery, Civil Cemetery, Bentuco Cemetery, and Muslim Cemetery. The Civil Cemetery in Ariman is the largest burial site, with an area of 5.53 hectares. The Gubat Catholic Cemetery in Cota na Daco has an area of 1.96 hectares.

Per RCBMS 2016 results, the number of households with sanitary toilets is 12,355 or 91.14 percent of the total households while 1,201 or 8.86 percent are without sanitary toilets or using unsanitary toilets.

Solid Waste Management

Municipal solid waste management program provides regular waste collection and disposal services to the eight (8) urban barangays and two (2) rural barangays of Cogon and San Ignacio where four (4) residential subdivisions are situated. Two trucks make daily rounds in the service area to collect residual wastes and transfer them to their final disposal site. The existing disposal facility in Gubat is a controlled dumpsite located at Barangay Tagaytay with an area of 1.12 hectares, of which half is undergoing rehabilitation. Solid waste segregation is implemented, with the residual and biodegradable wastes collected and disposed of. The other barangays not serviced by the trucks have Material Recovery Facilities (MRFs), and their residual wastes are collected and disposed upon request once the MRFs are full.

Non-biodegradable and biodegradable wastes are collected on the following fixed schedules:

Table 16. Residual Waste Collection Schedule.

Day	Biodegradable	Non-Biodegradable
Monday	Cota na Daco Paradijon	Luna-Candol
Tuesday	Luna-Candol	Manook
Wednesday	Manook	Balud Del Sur Balud Del Norte Tiris
Thursday	Balud Del Sur Balud Del Norte	Pinontingan
Friday	Pinontingan	Panganiban
Saturday	Panganiban	Cogon
Sunday	Cogon	Balud Del Sur Balud Del Norte

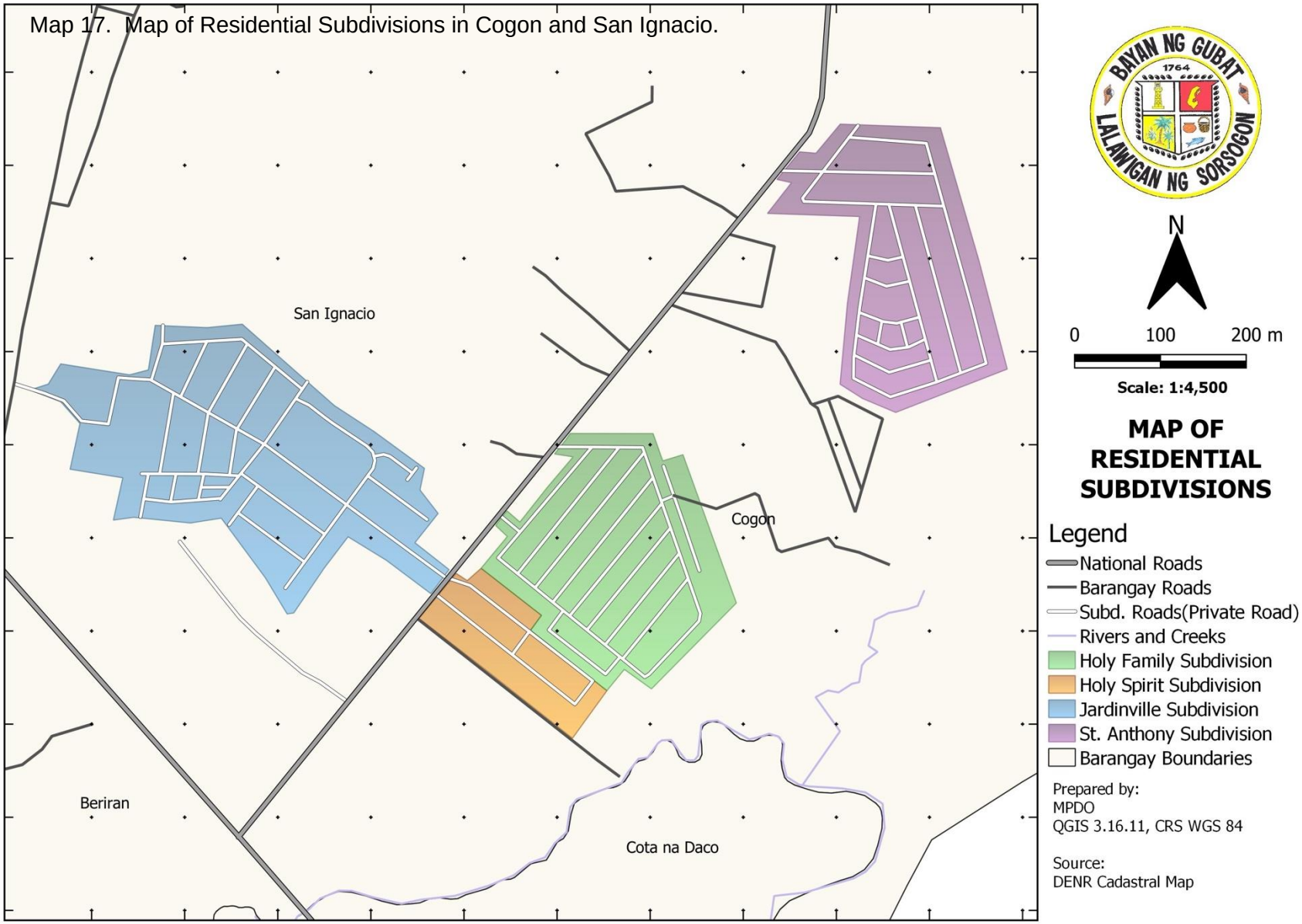
Housing

PSA data in 2015 listed 13,471 occupied housing units in Gubat. The ratio of households to occupied housing units is 1.00 and the ratio of household population to occupied housing units is 4.41.

There are four (4) residential subdivisions in Gubat, namely: (Cogon) Holy Spirit Subdivision, Holy Family Subdivision, Jardinville Subdivision, (San Ignacio) Saint Anthony Subdivision; while the NHA Resettlement Project at San Ignacio currently has a total of fifty (50) core houses and an available space for additional ninety-nine (99) housing units was already mapped out by the NHA (see Map 17).

For housing facilities and utilities, 12,325 households are served with electricity by SORECO II; while 6,497 households have Level III water supply from Gubat Water District.

Map 17. Map of Residential Subdivisions in Cogon and San Ignacio.



Social Welfare

The Municipality has facilities for social welfare including the Municipal Social Welfare and Development Office (MSWDO), Office for Senior Citizen Affairs (OSCA), and PWD Affairs Office (PDAO). The services include children welfare program, livelihood assistance program, family welfare program, women welfare program, PWD welfare program, Senior Citizen welfare program, emergency assistance program and assistance to Persons Who Use Drugs (PWUDs). Each program has activities to extend the services to different recipients.

Child Development Centers

There are 47 child development centers (formerly known as day care centers) established in the different barangays that catered to 1,308 enrollees in 2018.

Protective Services

The Philippine National Police (PNP), Bureau of Jail Management and Penology (BJMP), *barangay tanods*, and the Bureau of Fire Protection (BFP) primarily provide protective services and maintain peace and order and public safety. Recently, with the activation of a 24/7 MDRRMO Disaster Operation Center, emergency medical services and disaster response activities are undertaken by the members of the Gubat Emergency Response Team (GERT). There are 33 PNP personnel, 14 jail officers, 14 fire personnel, 491 *barangay tanods*, and the 18-strong GERT. In terms of facilities for protective services, the Municipal Police Station, the Disaster Operation Center, and the district jail are all located within the municipal compound; the fire station is located at Highway 59 in Ariman.

The police to population ratio is 1:1,870 and the firemen-to-population ratio is 1: 4,407, way below the standard ratio of 1:1000 and 1:2000, respectively. Compounding the issue in fire suppression is the more than three-decade old fire truck, which is still in service.

Facilities for Justice Administration

The municipality serves as the base office of some national government agencies to include justice administration of the municipalities of Prieto Diaz, Barcelona, and Bulusan. Inside the municipal compound are the Regional Trial Court (RTC), Municipal Circuit Trial Court (MCTC), and the Bureau of Jail Management and Penology (BJMP).

Sports and Recreation

Gubat has limited facilities for sports and recreation. The largest facilities are the covered Andaya Multipurpose Gymnasium and the Encinas Pavilion located within the municipal compound. Most of the barangay facilities are open multi-purpose auditoriums or basketball courts. The only parks are the Christ the King Park in Barangay Pinontingan, which is under the administration and supervision of the Saint Anthony of Padua Parish Church, and the St. Anthony Subdivision Park in Barangay Cogon. Existing parks occupy only 0.47 hectare, and the sport facilities sit on 2.27 hectares, way below the standard requirement.

IV. DEVELOPMENT CONSTRAINTS, CHALLENGES; AND PRIORITY ISSUES AND CONCERNS

The identified development constraints, challenges, and issues and concerns are a result of the sectoral studies and assessment of natural and physical environmental features of Gubat.

A. Development Constraints and Challenges

- **Climate change and disaster risk areas**. All the *población* barangays are with high to very high susceptibility to flood, storm surge, and tsunami. Meanwhile, upland areas have critical to high landslide susceptibility with increasing risk of rain-induced landslide occurrence due to projected increase in precipitation in the future.
- **No forest cover.** Although there is a vast area of agricultural land composed of coconut and rice, the town does not have a forest. The only forest covers that may be considered are the mangrove covers along the coast.
- **Inadequate farm-to-market roads and access roads to some rural barangays**. Being an agricultural community with most of its population dependent on farming for subsistence, the municipality should strive for self-sufficiency in major food commodities by providing adequate and properly maintained farm-to-market roads.
- **Absence of affordable housing for Informal Settler Families (ISF), families without housing units, and those families living in hazard-prone areas.** The local government of Gubat should have a program for the provision of affordable housing units to ISFs, families without housing units, and those families living in hazard-prone areas. This includes the establishment of evacuation centers for families who would possibly be affected by natural and man-made calamities such as floods and fire.
- **Inadequate classrooms and poorly-maintained school buildings.** With the projected increase in population, it is likewise expected that there will be an increase in school-going population. With this projected increase in enrollees, additional classrooms must be provided, and the maintenance of the existing ones should be regularly undertaken.
- **Dilapidated health facilities and need for additional Barangay Health Stations**. Considering the position of the Salvador R. Encinas District Hospital (SREDH) as a district hospital serving the neighboring towns, there is a need to upgrade the existing health facilities. Moreover, there is also a need for additional Barangay Health Stations and birthing facilities equipped with adequate amenities and personnel to man the said stations.
- **Low supply of clean and safe drinking water.** Gubat has three main sources of water: The Kadaop Spring in Barangay Bentuco, Patong Spring in Barangay Naagtan, and Cabigaan Spring in Barangay Cabigaan. The monthly average capacity of these springs is 39,166 cubic meters but because of the high percentage of wastage due to leaks in Gubat Water District's (GWD) major pipelines, this volume is still inadequate for the maximum day demand of the resident population. This compelled the GWD to augment water supply by drilling wells in many barangays as additional sources of potable water and by purchasing water from Casiguran Water District (CWD). These water sources can produce an average of 98, 299.51 cubic meters per month. However, water supply is still insufficient to provide water to all consumers.
- **Untapped other tourism potentials**. The municipality must not only depend on the existing beach resorts and surf camps, but also tap other natural tourism potentials such as caves, rivers, springs, and the development of built heritage as additional tourists' attractions.

- **Insurgency as a threat to public safety**. The perennial problem of insurgency brought about by armed groups remains a threat to public safety and order, and economic activity of the town.
- **Congestion in the main public market.** The main public market is heavily congested with public and private transport traversing the main thoroughfare of Gubat. It is also aggravated by several parking areas of tricycle operators around its vicinity, and the increasing number of ambulant vendors along the aisles and side streets of the public market.
- **Solid and liquid wastes management.** Solid waste management problem has become a serious concern of the municipality. At present, almost 15 tons of solid waste are being collected daily from the households by two dilapidated trucks. The manpower consists of two truck and backhoe drivers and 10garbage collectors. Meanwhile, the liquid wastes, if untreated when released to the seas, could potentially damage the coastal waters which in the long run can affect the livelihood of fishers and the tourism industry of the town.
- **Inadequate burial ground/cemetery**. Two of the four existing cemeteries are not only reaching their maximum carrying capacities, but are also both situated near the sea, making them highly susceptible to flooding, storm surge, and tsunami.

B. Priority Issues and Concerns

Natural Environment

- Poor enforcement of FLA policies along the coastline of Gubat
- Conversion of agricultural lands to other uses
- Loss of biodiversity
- Degradation of water bodies
- Illegal fishing practices and illegal fishponds

Social Sector

Health

- Need for expansion or upgrading of existing health facilities
- Inadequate number and poor conditions of Barangay Health Stations
- Insufficient number of medical personnel and hospital beds
- Lack of sanitary toilets in at least 1,200 households
- Increase in prevalence of diseases due to unhealthy lifestyle
- Continued prevalence of communicable diseases
- Absence of facilities for mentally-ill patients
- Congested Catholic and public cemetery and location do not comply with PD 856
- Insufficient capacity of existing septic vault for infectious and hazardous wastes
- Operation of controlled dumpsite as final disposal facility in violation of RA 9003
- Non-functional materials recovery facilities (MRFs) and absence of waste processing machines
- Non-Segregation of solid waste at source
- Poor implementation of ecological solid waste management (ESWM) by BLGUs
- Lack of wastewater treatment system

Housing

- Presence of informal settlers along coastal easement
- Housing backlog from displaced families
- Settlements in danger zones
- Absence of affordable housing options for ISFs and families living in hazard zone

Social Welfare Services

- Absence of facility for children, youth, PWD welfare services
- Lack of relief assistance facilities/warehouse
- Inadequate evacuation centers and presence of evacuation center facilities inside school premises
- Absence of skill/livelihood training facilities
- Inadequate Childhood Development Center facilities
- Non-compliance of facilities and establishments to RA 344

Protective Services

- Inappropriate location of Gubat Municipal Police Station, and police facilities do not conform to standard
- Lack of substations or outposts in strategic areas in the municipality contribute to the increased crime rate
- Fire station is considered substandard and lacks firefighting equipment
- District jail does not conform to total area requirement and inappropriately located inside municipal compound
- Dilapidated RTC and MTC located inside municipal compound
- Lack of evacuation centers

Sports and Recreation

- Insufficient parks, recreational spaces, and facilities
- Lack of sports playground/playing field
- Lack of sports and recreation facilities in barangays
- Almost all of the barangays in Gubat have basketball courts but some are located inside the vicinity of schools

Education

- Inadequate and poorly-maintained school classrooms and facilities
- Limited space of school site for the construction of new or additional classrooms
- Low participation rate in high schools
- High incidence of out-of-school youths
- Inadequate security/safety structures such as perimeter fences and gates
- Schools located in landslide and flood hazard zones

Economic Sector

Agriculture

- Decreasing/diminishing cropland area due to conversion
- Low productivity and income of agriculture sector
- Heavy reliance of farmers to chemical farming methods
- Low crop production due to poor condition of irrigation system
- Insufficient farm-to-market roads
- Insufficient post-harvest support facilities (dryers) and absence of modern post-harvest support facilities
- Limited market outlets for agricultural produce
- Flooding of rice areas

Industry, Commerce and Trade

- Congestion of central business district (CBD) i.e., public market complex
- Impaired mobility of people and goods due to traffic congestion within CBD area and lack of systematic parking space/area for tricycles and private vehicles
- Lack of systematic LGU-program to support existing agriculture enterprises or development of new industries
- Outdated investment incentive scheme of LGU

Tourism

- Absence of tourism information center, and tour guides
- Lack of tourism promotion facilities/signage/billboards
- Absence of multi-purpose tourism facilities especially in LGU-managed areas
- Absence of DOT accredited tourism establishments
- Lack of skills training of tourism front liners
- Poor access road condition to some tourism spots
- Lack of alternative tourism activities to coastal tourism

Infrastructure Sector

Transportation

- Lack/Insufficient parking area/terminal for tricycles
- Congested public market premises
- Lack of access roads to farm, tourism, commercial, and some barangay areas
- Insufficient pedestrian facilities
- Encroachment along municipal and national roads
- Insufficient drainage system within the *poblacion* area
- Insufficient/Lack of traffic signs/billboards/notices
- Road safety issues involving different public transportation vehicles

Power

- High cost of power
- Absence of alternative source of power

Water

- Poor condition of GWD water system facilities
- Lack of local bacteriological testing center
- Lack of funds for barangay Level II water system maintenance
- Presence of unsafe Level I water system

Information and Communications Technology

- Poor cellular signal in several barangays
- Lack of public Wi-Fi facilities

Climate Change and Disaster Risk

Extreme rainfall/precipitation

- Rice farmers are at increased risk from flooding
- Damage to quantity and quality of crops
- Irrigation system in high-flood hazard areas will incur more damage
- Households in flood-prone areas are more exposed to water-borne diseases
- Decrease in crop yield may aggravate nutritional status of children
- Pipes of water systems installed in high-landslide-prone areas will incur more damage
- Households in flood-prone areas are at higher risk to flooding
- Households in landslide-susceptible areas are at higher risk of landslide
- Flooded roads and spillways will be impassable for longer periods
- Schools and institutional facilities in flood and landslide prone areas at greater risk
- Increased number of displaced families
- Potential reduction of delivery of social services
- Overflow due to clogged drainage
- Disruption of economic activities due to flooding

Increased temperature/dry days

- Seasonality of dengue is disrupted and may occur year-round
- Loss of biodiversity in protected areas
- Damage to quantity and quality of crops
- Increase of consumption of water and electricity
- Increase of health-related problems due to heat-related stress
- Decrease in recharging capacity of water table
- Increase number of fish holidays
- Algal bloom pest multiplication

Supertyphoons

- Rice farmers are at increased risk from flooding
- Damage to quantity and quality of crops
- Irrigation system in high-flood-hazard areas will incur more damage
- Households in flood-prone areas are more exposed to water-borne diseases
- Decrease in crop yield may aggravate nutritional status of children
- Water system pipes installed in high landslide areas will incur more damage
- Households in flood-prone areas are at higher risk to flooding
- Households in landslide-susceptible areas are at higher risk of landslide
- Flooded roads and spillways will be impassable for longer periods
- Schools and institutional facilities in flood- and landslide-prone areas at greater risk
- Increased number of displaced families
- Potential reduction of delivery of social services
- Overflow due to clogged drainage
- Disruption of economic activities due to flooding
- Possibility of soil erosion and rain-induced landslide
- Decreased productivity of cash crops
- Health-Related problems that may affect quality of well-being
- Increased flooding incidence disrupting key service delivery and urban area activities

C. Comparative Advantage

Geographic advantage. The municipality is traversed by national tertiary roads that connect the *población* to the municipalities of Prieto Diaz, Barcelona, Casiguran, Bulusan, and Sorsogon City. This also makes Gubat's central business district as a catchment for trade and businesses for the neighboring towns.

Vast tracts of agricultural land. Around 86.06 percent of the total land area of Gubat or 9,884.33 hectares are devoted to agriculture. The municipality is endowed with extensive alluvial flat terrain which is suitable for rice production. As of 2019, there was a total of 33 irrigation systems with dams or water impounding systems with irrigation line canals. One solar-powered irrigation system (SPIS) for rice and high value crops for the Cabungahan Farmers Association in Barangay Bagacay were granted by the DA Regional Office No. V in 2018.

Presence of three major rivers. Gubat is interspersed by creeks and rivulets that are mostly tributaries of the three main rivers called the *Bulacao, Basiao* and *Tingting*. These are the main sources of irrigation and can be tapped as a source of renewable energy in the future and tourism activities.

Excellent fishing ground. The municipal waters opposite Barangay Bagacay down to Barangay Rizal covering an area of 1,340.62 hectares is an excellent fishing ground for stationary fishing. In addition, mangrove crabs are raised/produced in the fishponds in Barangay Bagacay, Paco, San Ignacio, Tiris, and Cogon.

Extensive beach front for coastal tourism. The extensive coastline beaches from Ariman to Rizal are ideal for surfing and swimming. Beach resorts are present along the beach, which have cottages for overnight accommodation and halls to cater to participants during seminars/conferences and meetings. In addition, the untapped coastline from Panganiban to Cogon and Bagacay can also be developed into other tourism attractions.

Presence of Bicol University Gubat Campus (BUGC). This is the only academic unit of the premier state university in Bicol located outside the province Albay. Started in 1997, the BUGC attracts students not only from Gubat but the whole province offering courses in agriculture, microfinance, entrepreneurship, and education. Planned campus extension located in a bigger area in Buenavista will offer new courses including tourism, among others.

Other Comparative Advantage

- Major producer of coconut
- Trained and organized pool of organic farmers
- Availability of raw materials and semi-finished products that can be processed for commercial and industrial uses
- Presence of major banks and financial institutions
- Presence of commercial establishments
- Distribution center for commodity traders and wholesalers
- Availability of skilled/professional and trainable workforce
- High literacy rate
- Presence of complete educational institutions from pre-school to tertiary level
- Presence of public elementary schools and childhood development centers in all 42 barangays
- Host to a district hospital and several private medical clinics
- Low crime rate
- Presence of cooperatives, people's organizations, and non-state actors

- Presence of national government agencies offices
- Existence of mostly concrete provincial, municipal and barangay road networks
- Good condition of the bridge network in national and provincial roads
- Existence of irrigation networks
- Existence of drainage systems in urban areas and barangay sites
- Host to SORECO II substation
- Existing Level III water system in most barangays
- All 42 barangays are energized
- Presence of ICT and telecommunications infrastructure

Development Opportunities

- Proximity to the provincial capital Sorsogon City
- Contiguous to emerging tourism destinations in the municipalities of Bulusan, Barcelona, Casiguran, and Prieto Diaz
- Availability of a pool of foreign funding partners for social development programs
- Poverty alleviation programs of national government agencies
- National government support in convergence projects
- Availability of Local Government Support Fund to fund development projects
- Availability of government support for socialized and low-cost housing
- Availability of government support for agriculture modernization
- Availability of government support for barangays declared as ARCs
- Abaca rehabilitation program of FIDA
- Enabling policies of Organic Act (RA 10068)
- Increasing number of business clientele from neighboring municipalities
- Presence of offices of several national government agencies
- Localization of ecological tourism as part of national development thrust
- Availability of DOT funding support for tourism development projects
- Build-Build-Build Program of the present administration
- Government programs in renewable energy
- Availability of People Survival Fund to fund CCA and DRR initiatives.
- Availability of government support for climate resiliency programs (PSF, DAR)

D. Functional Role of the Municipality

The proximity of Gubat to the provincial capital Sorsogon City and the municipalities of Bulusan, Barcelona, Casiguran, and Prieto Diaz presents several development opportunities and the alignment to the provincial physical framework plan. With this, the municipality is seen to evolve as:

- a commercial, trading, and financial center with a catchment area spanning the municipalities of Bulusan, Barcelona, Casiguran, and Prieto Diaz;
- an emerging agricultural enterprise community with focus on conservation agriculture (rice and coconut); fisheries (mangrove crab primary production, danggit, seaweed production); dairy production (carabao milk);
- a major coastal tourism destination in Sorsogon ideal for surfing, swimming, snorkeling, diving, and other marine activities, and a jump-off point to other tourist destinations in neighboring municipalities; and
- the tertiary education center of Sorsogon with the expansion of Bicol University Gubat Campus and the presence of research and development facilities.

The themes of sustainable agriculture, ecotourism, and environmental protection pervade in the CLUPs of the largely agricultural towns of Barcelona, Casiguran and Prieto Diaz which Gubat shares boundaries with. Even Sorsogon City has a large agricultural territory in its rural area where the same themes resonate. It follows that the CLUPs of these LGUs are in in harmony with each other.

Barcelona which bounds Gubat on its south side is priming itself up as the banana capital of the province and as a prime tourism destination with its Ruins Park, its centuries-old church edifice, and its Colonial Spain-inspired Town Hall as the main offering. The bananas it produces as well as its other agricultural products could be sold in Gubat which markets itself as a commercial center. As a tourist destination, Barcelona can form with Gubat and other towns a mutually-beneficial tourism circuit.

Prieto Diaz on the north of Gubat lays claim to being an excellent eco-tourism destination primarily because of its lush mangrove plantation. Other attractions are the Halabang Lapis Sandbar, Nagsurok Cave, Takla Spring, Bigaho Island Eco-Park, Lebanon Beach, and Lupi Beach. With an abundance of tourism draws, it makes for a very good partner for Gubat and Barcelona in a tourism circuit.

Prieto Diaz has seaweed production in Barangay Carayat, which adjoins Barangay Bagacay in Gubat where seaweed production is a fledgling industry. The potential for a joint undertaking in seaweed culture is high for the two towns.

Casiguran on the western border of Gubat is focused on tourism with its Orok Cold Spring Resort, Residencia Del Hamor, and Nagsipit Falls and takes pride in its marine products, namely: crabs, mussels, scallops, eel fish and some other species of fish. Orok Cold Spring Resort in Barangay Inlagadian is a very popular resort to the masses while the Residencia del Hamor in the same barangay cater to the upscale tourists. With its thrust on tourism, Casiguran, like Barcelona and Prieto Diaz, will make good partners with Gubat in a tourism circuit. And with its quality marine products, it can serve as a supplier to the public market of Gubat.

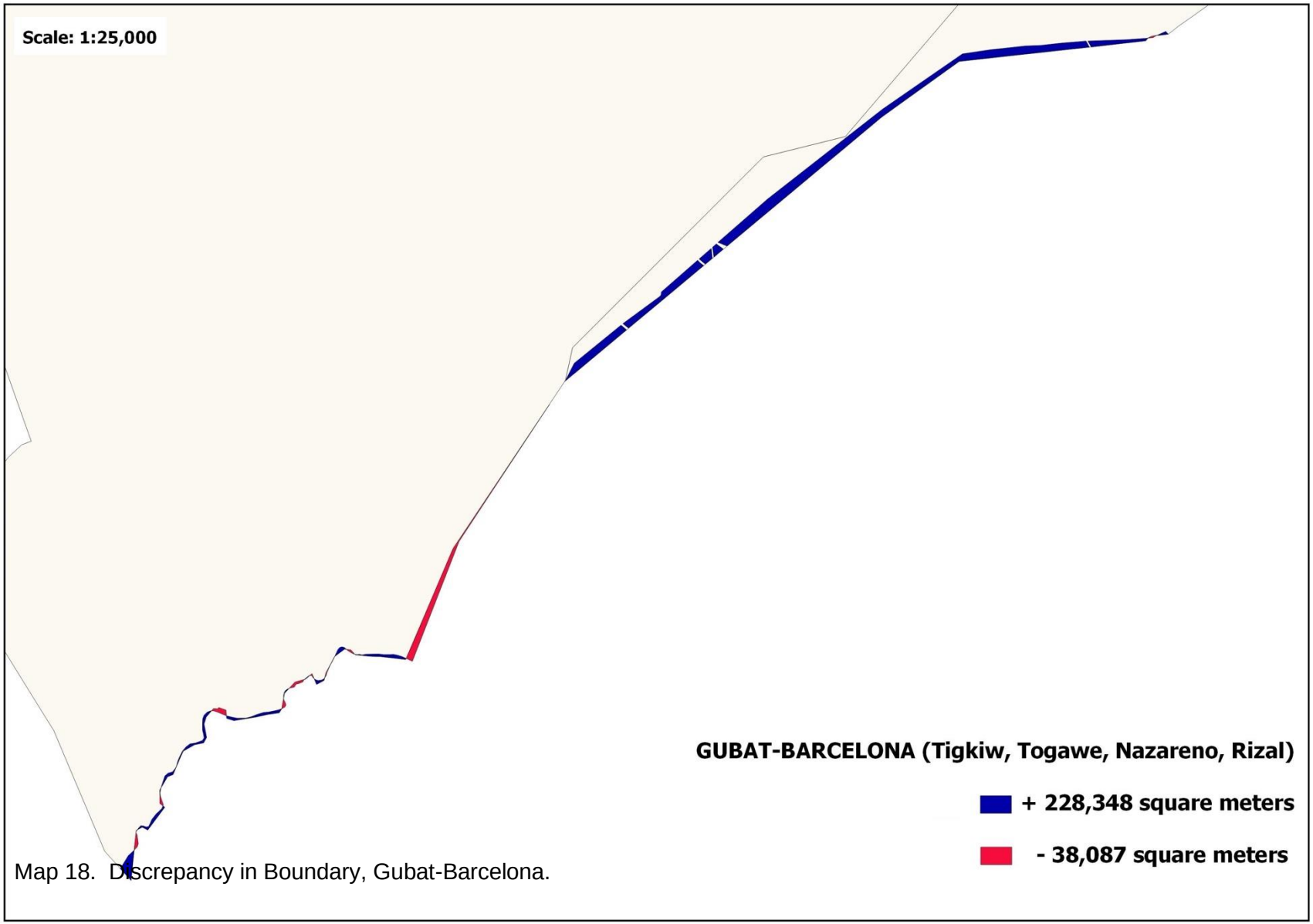
Sorsogon City which serves as the business and commercial center of the province has a lot of eco-tourism destinations, particularly in Bacon District, making it a potential tourism circuit partner of Gubat. Moreover, the proximity of Gubat to Sorsogon City offers numerous strategic development opportunities for the town. In the future, it can serve as a bedroom community or commuter town that can provide for the demands for more residential houses and accommodation of the capital city. It can also position itself to supply additional workforce and complementary employment to the needs of Sorsogon City.

E. Territorial Disputes with Other Localities and Discrepancies in Cadastral Maps of PASSO and DENR

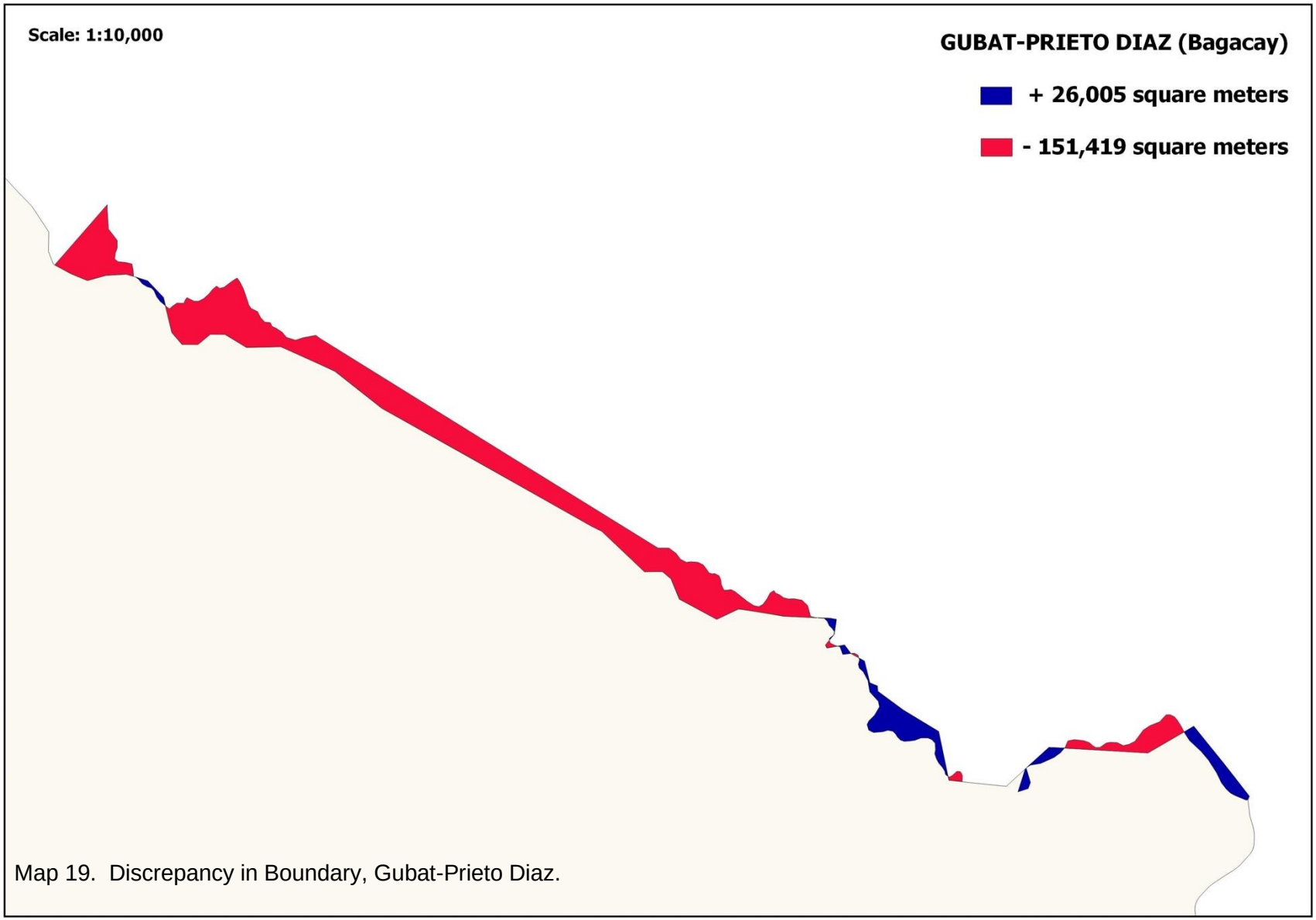
The map of Gubat based on the cadastral survey of the Provincial Assessor Office (PASSO) and the cadastral map of the Department of the Environment and Natural Resources (DENR) produced several discrepancies in the total land areas in boundary barangays (see Maps 18-22) that may result in territorial conflicts between Gubat and the following neighboring municipalities:

Table 17. Territorial Disputes with Other Localities and Discrepancies in Cadastral Maps of PASSO and DENR.

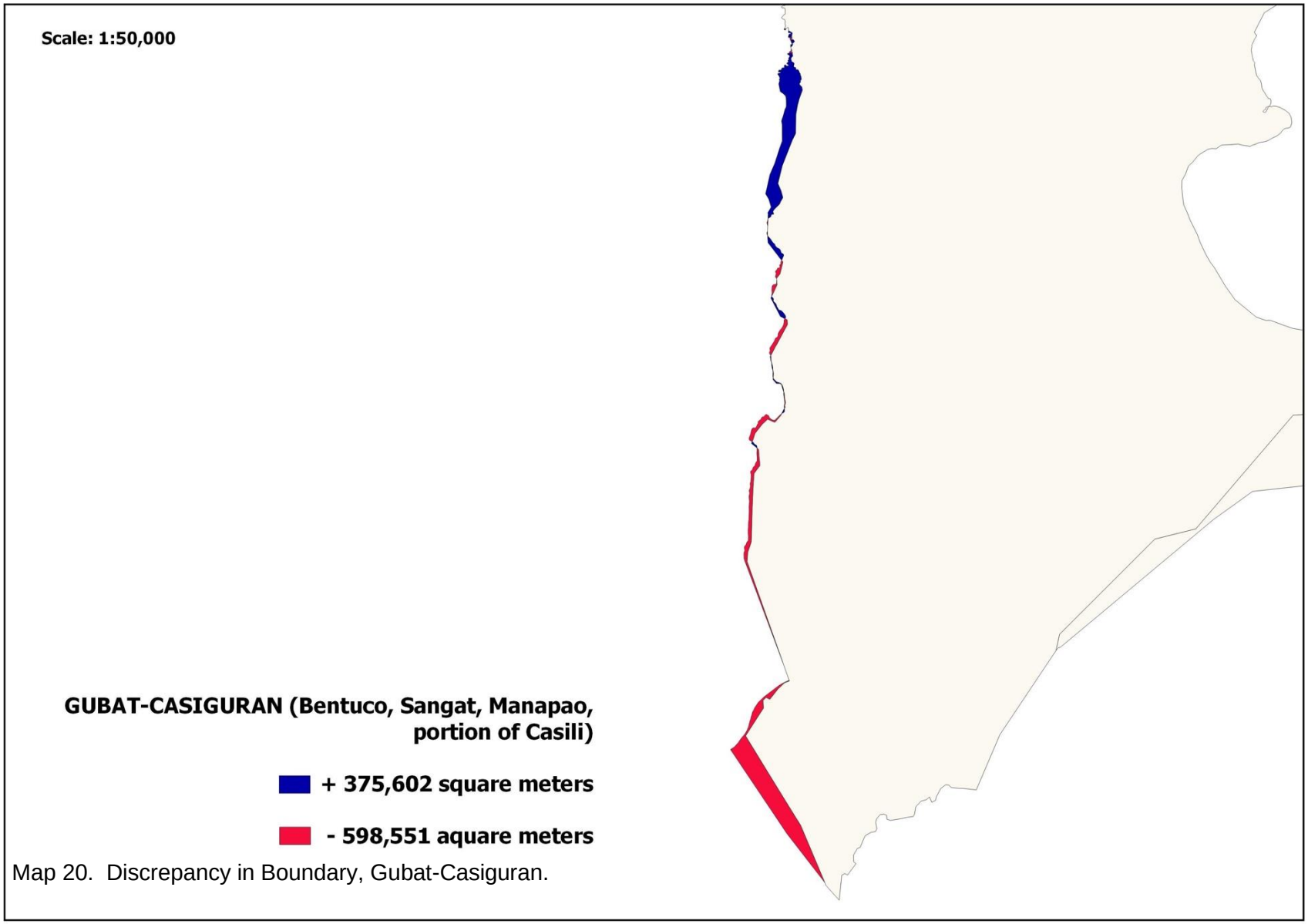
Location	**Affected Barangays**	**Area (+) (sqm)**	**Area (-) (sqm)**
(South) Gubat-Barcelona	Tigkiw, Togawe, Nazareno, Rizal	228,348	38,087
(North) Gubat-Prieto Diaz	Bagacay	26,005	151,419
(West) Gubat-Casiguran	Bentuco, Sangat, Manapao, portion of Casili)	375,602s	558,591
(West) Gubat-Bacon District	Portion of Casili, Payawin, Cabiguhan, Lapinig, Patag, portion of Paco, Bagacay	587,020	206,093s
Mangrove, foreshore land, and tourism zone	Bagacay, Tiris, Cogon, Panganiban, Ariman, Buenavista, Rizal	75,096	1,703,356



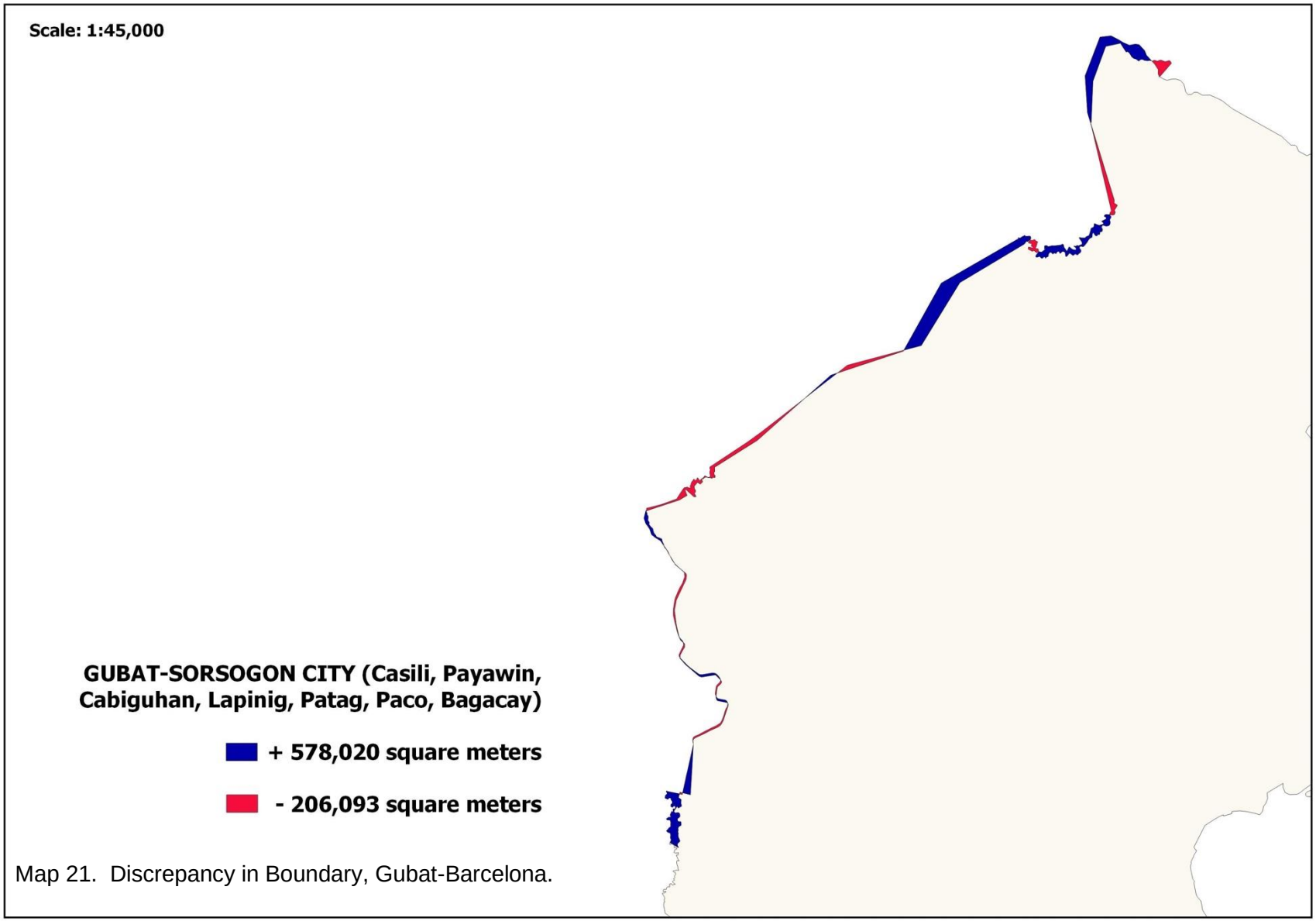
Map 18. Discrepancy in Boundary, Gubat-Barcelona.



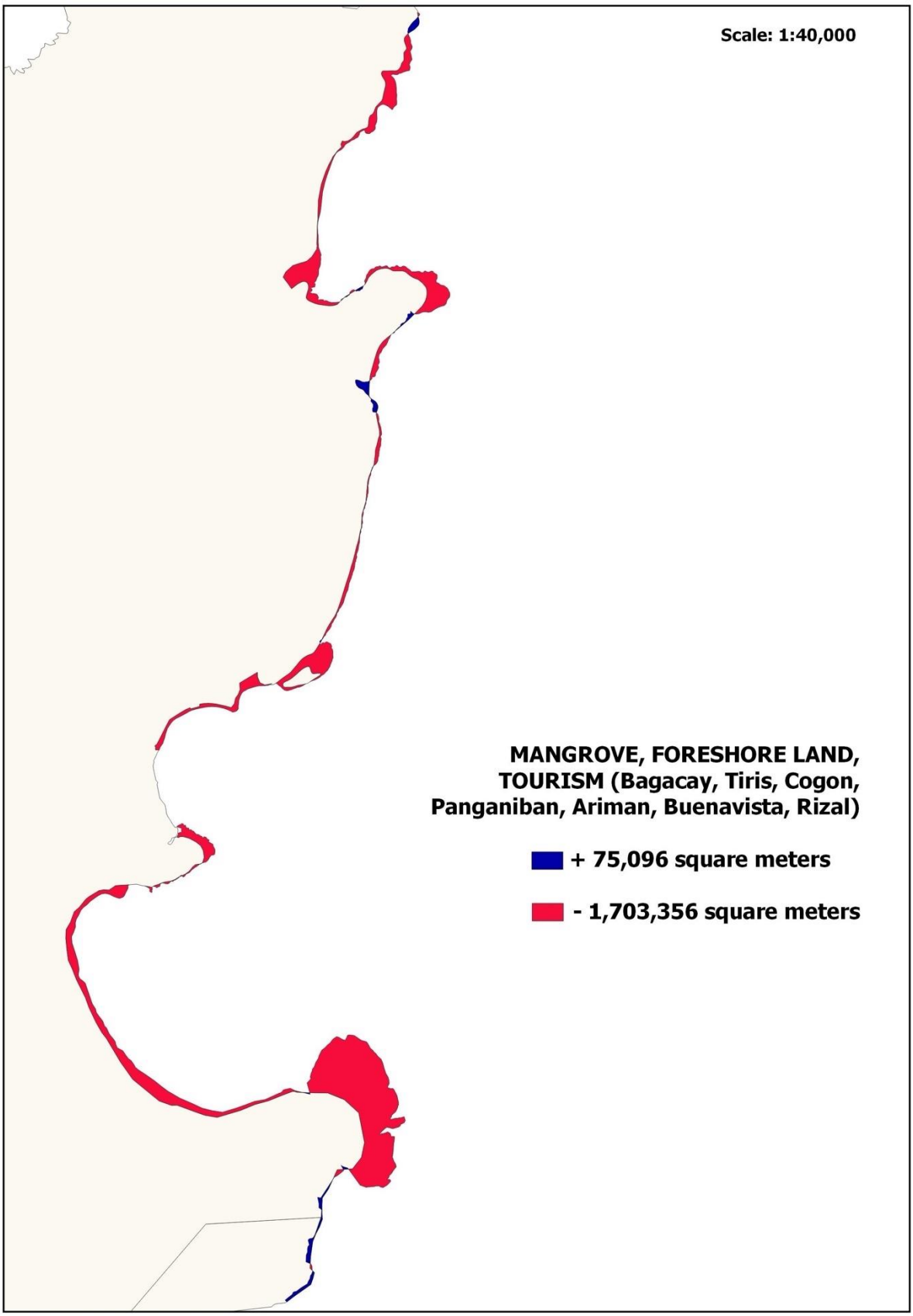
Map 19. Discrepancy in Boundary, Gubat-Prieto Diaz.



Map 20. Discrepancy in Boundary, Gubat-Casiguran.



Map 21. Discrepancy in Boundary, Gubat-Barcelona.



Map 22. Discrepancy in Boundary: Mangrove, Foreshore Land, Tourism.

V. THE COMPREHENSIVE LAND USE PLAN

Key consideration in the preparation of this CLUP is the incorporation of the Climate and Disaster Risks Assessment (CDRA). The CDRA was conducted in the 42 barangays of Gubat from May-September 2018. It followed the HLURB Supplemental Guidelines on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use Plan (CLUP) under the guidance of the UP School of Environmental Science and Management (SESAM). It was done to examine the degree of exposure of human and natural systems to climate stimuli and hazards, assess vulnerabilities and sensitivities, and provide sound information to supplement the local planning process. Risk information coming from the assessment will form part of the basis for an informed decision in the optimum allocation of land to various uses, taking into account the spatial and sectoral constraints posed by natural hazards and the potential impacts of climate change (HLURB, 2014).

Next is the vertical alignment of the CLUP to the national (Philippine Development Plan—*Ambisyon Natin 2040*), regional, and provincial physical framework plans. It was also prepared to complement the UN Sustainable Development Goals (SDGs). Lastly, the municipal waters are deliberately included in the map to adopt the Ridge to Reef framework of HLURB CLUP guidelines, which was able to consider watersheds and other interior municipal waters in its overall development plan.

A. Vision, Goals, and Objectives

Vision.

Gubat as a center of trade and industry, agro-ecotourism, and quality education.

It shall be a prime example in the practice of well-managed and principled government that will speed up and sustain competitive and progressive local economy; significantly expanding and improving infrastructure anchored on a climate-adaptive and sustained green environment; while maintaining a God-loving, peaceful, gender-fair, and educated community towards a healthy, self-reliant, dignified, and participative society.

Goals, Objectives, and Targets.

The formulation of the goals of the municipality is guided by the UN Sustainable Development Goals and the Philippine Development Plan--*Ambisyon Natin* 2040, aligned further with the regional and provincial physical framework plans. They are defined and categorized as follows:

Economic Development

a. Increase investment opportunities on commerce, trade, and industry;
b. Establish the municipality as a major financial center, and a hub for a sustainable service-based industry;
c. Promote the municipality as a center of sustainable coastal, cultural, and farm tourism;
d. Expand support to agri-fishery development and introduce adaptive measures against climate change for sustainability and food security; and
e. Improve mobility of goods, services, people, and tourists through the establishment of an integrated road circulation, transport system, and a progressive communication network.

Social Development

a. Ensure adaptive, safe, risk-resilient, disaster-sensitive, and decent human settlement;
b. Institutionalize uninterrupted access to inclusive protective and social services;
c. Improve opportunities to sports and recreation facilities;
d. Increase access to universal and mental health care;
e. Ensure peaceful, safe, and secure communities;
f. Intensify cultural appreciation and heritage conservation; and
g. Promote access to quality education for all.

Environmental Management

a. Ensure a healthy and productive environment that is resilient to climate-related and non-climate related natural and anthropogenic climate-related hazards;
b. Build green infrastructure facilities that promote environmental sustainability;
c. Conserve floodplains;
d. Encourage the use of renewable sources of energy and water recycling facilities;
e. Ensure protected area management and rehabilitation; and
f. Improve solid waste and wastewater management.

Institutional

a. Strengthen partnership and collaboration to enhance delivery of social good, sustainable development, and climate-change adaptation strategies;
b. Improve governance mechanism for transparency, accountability, business continuity, and access to information;
c. Enhance quality workplace management system;
d. Develop system and procedures supportive of ease of doing business and a progressive revenue collection program; and
e. Enhance frontline service delivery efficiency and effectiveness.

Infrastructure

a. Provide more comfortable, efficient, and safe public transportation system to connect barangays and other localities;
b. Expand infrastructure support to agriculture, farm-to-market roads, and irrigation;
c. Build disaster-risk-sensitive facilities to mitigate the negative impact of climate change;
d. Ensure sustainable tourism facilities and amenities; and
e. Improve social services facilities for the youth, senior citizens, people with disabilities, women, and other marginalized sectors of the society.

B. Development Strategies

In the last five decades, Gubat has been the trade and economic catchment area for the neighboring towns of Barcelona, Prieto Diaz, Bulusan, Casiguran, and as far as the island of Biri in Northern Samar. Potentially, the economic development of the municipality comprises activities in three key sectors. These sectors will form the main drivers in transforming the economy as the base for development and expansion of Gubat: agriculture, coastal tourism, trade/industry, and education.

The formulation of development thrusts and spatial strategies was drawn from the identified roles that the municipality can best contribute to the development of the province and the region considering its increasing population, changes in settlement patterns, land resource utilization, tourism development, and the municipality becoming the center of tertiary education in the province through the presence of Bicol University Gubat Campus.

Further, growth centers are identified in other parts of the town as urban expansion areas outside of the *población* that will not only spur developments in other areas but will also serve as catchment areas in the delivery of social services to far-flung barangays. Satellite markets shall likewise be established in these growth centers so that producers would not have to wait for a market day in the main public market in the *población* to sell their produce, purchase their basic necessities, and therefore decongesting traffic at the town center.

Moreover, national policies and agenda shall be complemented with local policies. This can be achieved through continued agricultural productivity and sustainable tourism development. Improving infrastructure utilities and services would complement agricultural and fishery productivity improvement. Promotion and adoption of integrated and sustainable farming, fishery technology in agricultural areas will be utilized. Improved agricultural productivity will be enhanced by the improvement and provision of agri-processing facilities near the production centers, where infrastructure facilities such as irrigation systems and farms will be made available. Rice mills, solar dryers, and post-harvest facilities will be established in areas where there are favorable crops largely grown. Alongside this, ease of doing business will be institutionalized to support agriculture and economic development.

Conservation and preservation of natural resources will be done through an efficient and effective implementation of the Environment Code of Gubat. Agri-fishery and tourism zones should be properly delineated in the coastal areas to avoid conflicts with fishing and other livelihood activities in the coastal/marine waters and activities related to the maintenance of marine protected areas. Level of access and use should be considered, carefully balancing the sensitivity of the coastal areas with the needs of the residents. Beaches are for public access, while navigational routes and location of artificial coral reefs will be designated. Development controls and measures will be set in place especially in the coastal areas, which are susceptible to flooding in case there would be an occurrence of tsunamis.

It can be recalled that it is the policy of the State to ensure the sustainable use, development, management, protection, and conservation of the country's environment and natural resources, and cultural heritage for the enjoyment of present and future generations. With this, the LGU is mandated to promote a tourism industry that is ecologically sustainable, responsible, participative, culturally sensitive, economically viable, and equitable for local communities. Considering the potential increase of tourists in Gubat, there is a need to identify and develop its coastal barangays as ecological tourism zones. It should be noted, however, that aside from beaches for surfing in barangay Buenavista, other coastal barangays of Gubat have areas that can be developed into ecotourism destinations. The potential ecological tourism zone is seen to generate additional revenue and investments that would provide more livelihood opportunities for locals.

Agricultural Intensification

Agricultural intensification will be implemented to capitalize on existing agricultural opportunities in the municipality. Gubat has abundant land area suitable for rice, coconut, and abaca farming as well as existing fisheries and other marine resources.

A focus on agricultural intensification could also prioritize addressing significant barriers to the productivity and capacity of the agricultural sector and the subsequent impact on incomes, livelihood and access to food, such as a lack of agricultural infrastructure, including post-harvest facilities, a lack of diverse soil and terrain type, a lack of technical knowledge and capacity among farmers and small land holdings which limits the opportunity for diversifying crop varieties on farms. Additionally, structures that support agriculture, like the market, the policy framework in particular the Municipal Fisheries Ordinance, and the business environment require further development to improve the sector.

Adding value to existing commodities such as coconuts and rice, through processing, marketing and exporting should be explored, as well as the diversification of horticulture at large to increase local food security. These opportunities should be capitalized upon to mitigate the threats of malnutrition and food insecurity, especially when faced with global threats such as climate change, environmental degradation and diminishing natural resources. Sustainable agricultural practice should also be adopted, to sustain existing resources for future generations but also to set a standard for the province and capitalize on opportunities for value-adding in ventures such as organic produce.

A future scenario in Gubat where agricultural intensification is prioritized includes people who are economically secure, with valuable skills in agriculture, agri-business and selling their produce at the right price for both buyers and sellers. Agriculture in the future, like the present day, will not only employ the majority of the population of Gubat, as farmers and fisher folks but also in agri-processing, business, marketing and retail. Infrastructure is in place to support agriculture from farm to yield to processing to market and can withstand environmental risks to the province. All the people of Gubat, including those in rural barangays, are food secure and make a good living from agriculture.

Some advantages to agricultural intensification that were identified by the community:

- Minimize malnutrition
- Increase food production
- Increase income
- Generate livelihood
- Affordable food supply
- Increase revenue
- Modernize farming
- Improve bridges, FMRs

Livelihood generation and increased income and revenue are advantages of all development options. However, minimizing malnutrition, increasing food production and an affordable food supply are all advantages, which have an impact on access to food, a basic human need and right. Disadvantages identified were:

- Decrease agricultural land
- Depletion/Scarcity of resources
- Market for farm products
- Health hazards
- Environment hazards
- Contractor competition

As many of the advantages of agricultural intensification address the basic human need of food access, the disadvantages should be mitigated. While increased agricultural activity could decrease agricultural land, increased agricultural activity could occur on existing agricultural land using principles of inter-cropping. Diversifying agriculture could also mitigate the risk of environmental hazards and the depletion/scarcity of resources through increasing biodiversity, increasing resilience to inclement weather patterns and increasing the diversity and size of yields for direct consumption.

Some key strategies to intensify agriculture include:

- Crop diversification
    - Identify areas for horticulture development
    - Advocate for regional road map for specialization
    - Encourage crop rotations
- Agricultural infrastructure
    - Increase FMRs and bridges
    - Barangay commercial zones and cluster farmers' markets
    - Review Fisheries Ordinance
    - Establish solar and mechanical dryers in all rice farming barangays
- Agri-processing
    - Small-scale processing plant

Commercial Expansion

Commercial expansion will also be adopted to further enhance Gubat's existing position as a center of commerce, health, education, and social services. Further, the presence of communication, postal, and courier facilities are additional services that make Gubat frequented by out-of-town visitors from neighboring municipalities of Prieto Diaz, Casiguran, Bulusan, and Barcelona. The emerging coastal tourism areas in Gubat could be further enhanced by integrating sustainable and commercial development, including potential complementary tourism and agri-fishery projects with neighboring coastal municipalities.

The ongoing improvement of the public market and its expansion to include national brands is strategic in boosting the town as a trade and center of commerce, therefore expanding further its customer base.

Commercial expansion could also address the low price of agricultural products, lack of job opportunities, monopoly of business, and the lack of capital. Improvement of existing buildings for commercial enterprise such as the market as well as increasing attraction of new commercial enterprises, and expansion of commercial areas are decisive to this vision. Systematization of the transport system well then pave the way to further improvement, thus, it is imperative for the local government to improve the transport terminal and develop new ones to reduce the congestion in the center, improve accessibility, enable more employment, create larger markets for existing businesses and save time and costs for the community and business. Greater mobility in general for the community contributes to better opportunities for social and economic development.

Commercial expansion, like agricultural development, will help to mitigate unemployment and underemployment through the increase of economic activity and address the issue of increasing poverty in Gubat. Local business and commercial enterprise, including tourism services, would increase to a larger proportion of revenue generated in the municipality, employ a larger proportion of the population, and provide more opportunities for

social and economic inclusion. It would then further existing opportunities in social services delivery, such as continuing to improve the hospital and other health services, education, including the continued rehabilitation of existing classrooms and the building of new classrooms in areas of need. The community would also have more options for employment beyond the local environment because of improved transport mobility.

Advantages identified by pursuing commercial expansion are:

- Generates employment
- Urban status
- Increased revenue
- More investors
- More construction of buildings

The main advantage of pursuing commercial expansion is increased employment, revenue, and investment through capitalizing on existing urban potential. More construction of buildings would also provide opportunity for economic growth through increased business and enterprise.

Identified disadvantages are:

- River and stream pollution
- Overcrowding
- Traffic congestion
- General pollution

Traffic congestion and general pollution could be mitigated through the reduction of traffic in the poblacion and development of satellite transport terminals. Overcrowding in the poblacion could be mitigated by decentralizing the market and adding commercial facilities within identified areas which while spreading density of people, would also help to reduce waste congestion of solid waste. Overcrowding in residential areas could be mitigated by placing capacity limits on residential zones, resettling informal settlers in already over-crowded areas, and implementing new residential zones with accompanying amenity.

Some key strategies to development commercially are:

- Development of the Triangle Growth Nodes and commercial areas outside the town center and current public market
- Vertical development in the existing public market
- Enhancement of existing commercial structures
  - Establish market improvement plan
- Strengthening strategic role
  - Upgrade existing health, commerce, and education facilities
  - Upgrade existing transport network and construct more transport terminals
- Commercial investment attraction
  - Update Municipal Investment and Revenue Codes
- Tourism development
  - Increase infrastructure and amenity at existing tourist sites
  - Increase sustainable development in surrounding areas

Trade and Industry Development

Agriculture, trade, and industry have complementary roles in the development of local economy. The plan to intensify agricultural sector is critical to the town's trade and industry development because it prepares the conditions for industries to increase agricultural surplus and capital, and boost labor productivity.

As the key steps to expedite and facilitate this projected economic growth and development of the locality, it is necessary for the local government to formulate approaches to encourage new investments and support the expansion of existing industries, primarily the diversification of agricultural enterprises. Gubat's economic strength lies in its land and coastal resources, thus, the local government sees the strengthening existing agriculture enterprises to build a more solid economic foundation for the town.

Among the most viable agriculture enterprises in the municipality is the mangrove crab industry. This king crab species is the most-prized export product of the town where crablets can be found mostly in estuaries and mangrove forests. More importantly, LGU's development thrust in mangrove conservation is expected to help increase crablets production.

Another emerging enterprise in Gubat is danggit processing, which was introduced to CotaNorteSur Gubat Fisherfolk Association (CNSGFA) by the LGU in collaboration with the Department of Trade and Industry (DTI) and through a machinery grant by the Department of Science and Technology (DOST). As a pilot project, this initiative could further develop into a danggit industry involving multisectoral people's organizations in coastal barangays.

Mariculture or seaweed farming is also a relatively dominant livelihood among fisherfolks in Gubat. In 2020, almost three hectares of productive areas for seaweed culture with at least one thousand kilograms of harvest per cropping cycle are already operational. With the rising popularity of veganism and plant-based food consumption, Philippines as one of the top producers of seaweeds in the world, now has a bigger global market share. In this context, the local government should capitalize on the opportunity by intensifying the town's seaweed farming production. And with proper support from the local government and related agencies, seaweed farming can be developed into a sustainable industry that will provide business and employment opportunities for Gubatnons.

Among the recent projects of the Office of the Municipal Agriculturist (OMAg) is carabao dairy production. It utilizes new agricultural technology of crossbreeding native carabao and Murrah buffaloes. The upgraded buffaloes grow faster and produce more milk than native carabaos without compromising draftability and reproduction ability. The recent growth of dairy production is the result of the partnership between the local government and Gubat Saint Anthony Cooperative (GSAC). The process includes contracting farmers to supply carabao milk for production at the new GSAC milk production facility.

Some strategies identified in the development of trade and industry are:

- Develop policies to enhance business climate and attract investors
    - Create Local Economic Investment Office (LEIPO)
    - Update the local investment and incentive code
    - Facilitate access to investment sites
- Support existing businesses
    - Provide incentives for enterprises that generate significant levels of employment and economic gains to the town
    - Facilitate in the promotion of industries (through Negosyo Centers)
    - Facilitate partnership with government agencies
- Promote public-private partnerships

Sustainable Tourism Development

A long stretch of shoreline characterized by wide and grayish white sand attracts beach goers to visit Gubat. Because of its location on the east coast of the Sorsogon facing the vast Pacific Ocean, Gubat Bay is a perfect spot for marine activities such as surfing, snorkeling, diving, boat-based fishing, and swimming. In recent years, the town's tourism industry was put into the spotlight because of surfing. This has greatly influenced the increase in temporary inhabitants. In the past years, national competitions such as surfing, volleyball, and extreme sailing events were held that drove local and international tourists to visit the municipality. In 2018 alone, arrivals of tourists reached approximately 35,000 as surfing activities and other coastal and marine activities attracted people to visit the municipality. High influx of tourists surges from March to May and October to December where coastal and marine activities are at their best.

Coastal tourism deals with two complex systems – the tourism system and the coastal system. The former is primarily a human system and the latter, an environmental one. Naturally, there are close interactions between the two systems, i.e., the impact of tides, storms, wave action, and other natural phenomena on coastal tourism. Of the same importance are the impacts of tourism on the environmental and social settings of a coastal system. These include accelerated beach erosion, deteriorating coastal water quality, dumping of solid waste on beaches or in near-beach areas, coral reef degradation through inadequate anchorage and landing facilities, saltwater intrusion, increasing traffic noise and congestion.

The International Ecotourism Society defines ecotourism as "*responsible travel to natural areas, which conserves the environment and sustains the well-being of local people"* (Lindberg and Hawkins, 1993). In this context, ecotourism activities in Gubat should bring direct benefits to locales in the areas. And to further establish its sustainability, ecotourism infrastructures should include a wider range of locally owned and operated tourism businesses such as tour operators and travel agents, small and medium guesthouses and hotels among others.

Currently, there are ten (10) accommodation establishments and six (6) restaurants in the municipality to supplement the needs of the tourists. Republic Act 9593, otherwise known as the National Tourism Act 2009 promulgated the National Accommodation Standards that prescribes the set of requirements and standards needed for the operation and maintenance of accommodation facilities and services that cater to international and local tourists. In Gubat, although there are already some existing accommodation facilities that can cater to the current demand, no accommodation establishment is accredited with the Department of Tourism (DOT) and many are still non-compliant to business permits requirements such as those of the Bureau of Fire.

Tourism industry as an alternative development strategy will generate economic benefits through increased income and development of previously undeveloped areas especially the rural areas. Ecotourism can be the banner program of the municipality through the development of the coastal resources including mangrove areas and sanctuaries. Moreover, a focus on cultural tourism (i.e. heritage conservation, salanigo weaving) and culinary is envisaged to attract more tourists in the municipality in addition to the festivals and home-grown cultural tourism activities.

Some key strategies for sustainable tourism include:

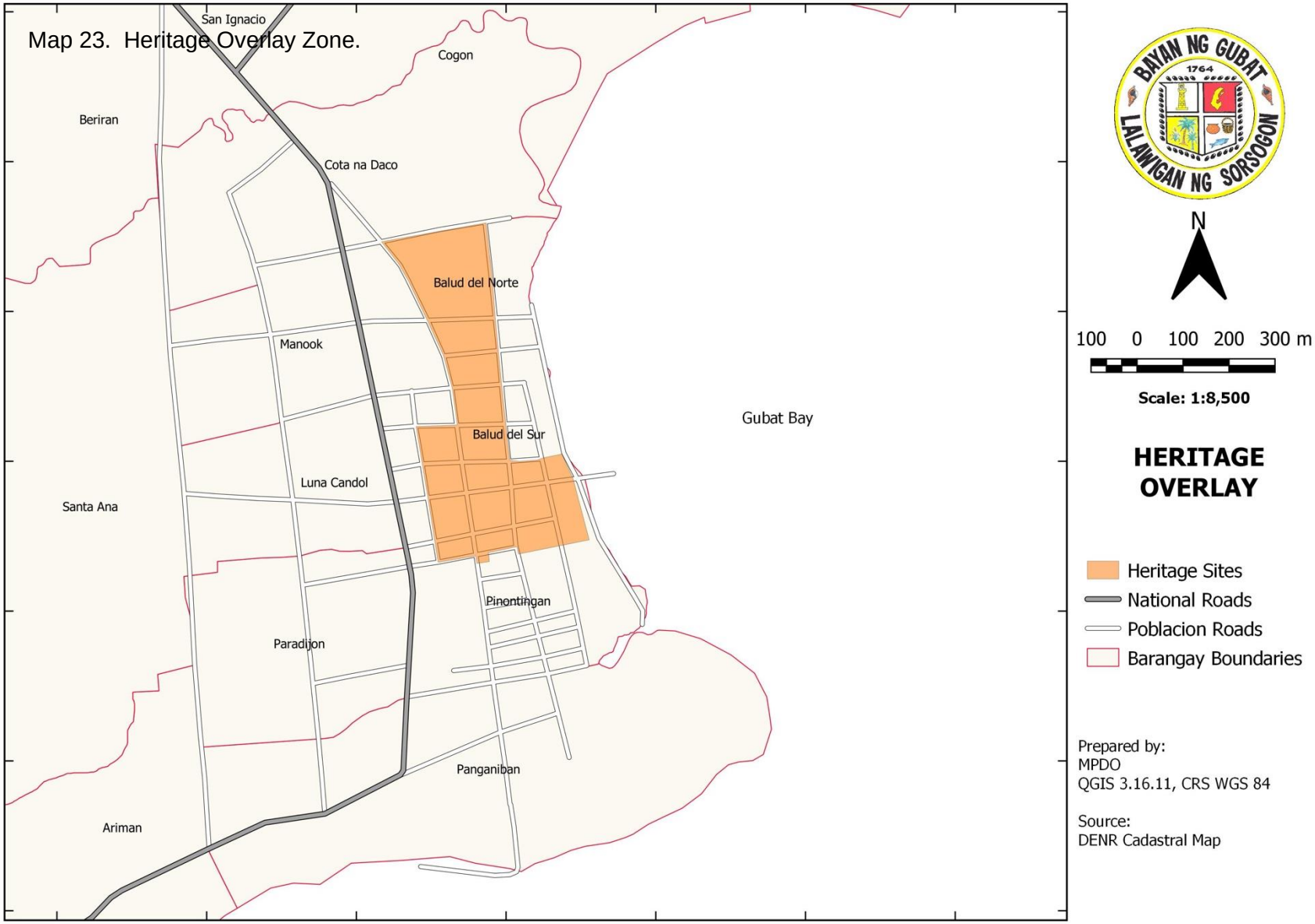
- Declare the coastline along Gubat Bay as a Tourism Protected Area (TPA)
- Identify and develop new eco-tourism attractions that can attract tourists during surfing off-peak season, including farm and agri-tourism, heritage tourism;
- Develop alternative enterprises that will benefit critical coastal resource users and reduce fishing pressure;
- Rehabilitate possible dive sites and improvement of mangrove forest ecosystem;
- Create a coastal resource management (CRM) council to include representatives from each coastal barangay, DENR, PAMB, NGOs, youth sector and private sector (i.e., resort owners, tour operators) to examine CRM issues and form resolutions to address them;
- Create a zoning plan, which will designate specific issues for different zones based on the most feasible economic, environmental, and tourism use i.e. marine sanctuary, seaweed farming, diving, fish cage culture, etc. This zoning plan will guide in the development of Gubat Bay and the use of foreshore and easement/salvage zones;
- Delineate and propose co-management of the foreshore lots;
- LGUs and NGOs should implement projects and initiatives that would conserve the remaining resources and raise the standards of living of the fisherfolk and farmers to prevent illegal activities i.e., fishing, mangrove cutting, *djakos.*

Farm tourism will be developed as an alternative livelihood for farming communities in the municipality. As defined by the Farm Tourism Development Act of 2016 (RA10816), farm tourism is “the practice of attracting visitors and tourists to farm areas for production, educational and recreational purposes”. As a subsector of rural tourism, farm tourism also includes educational agriculture or fishery-based activities for tourists, farmers and fishers who want to be trained on different farming techniques.

There are numerous organic farms in the municipality. If developed, visitors can experience farm life through planting and harvesting crops. Moreover, the local government will draft policies and plans to develop and promote farm tourism activities in the municipality. The institutionalization of these policies and plans will further support farmers in establishment and operation of their own tourist farms and farm schools.

Another key tourism development strategy to complement coastal and farm tourism is heritage and cultural tourism. This presents alternative tourism activities and strengthens the town’s social fabric by promoting culture and values as the foundation of culture-sensitive governance and development. A special heritage overlay zone is planned to map out the *visita historia* experience. The *visita historia* would trace the timeline of Gubat history from the zenith period of Manila Galleon Trade until the post-World War II period by mapping and preserving the still standing edifices and the stories that stood over time and served as silent witnesses to the town’s rich history and culture (see Map 23). This includes the Casa Escurel, Union Obrero de Gubat Building, Encinas House, Saint Anthony de Padua Church, Portas Mansion, Gabaldon Building inside Gubat North Central School, Old Presidencia, Monreal Ruins, and Almacene. This will also highlight areas dedicated to salanigo weaving and pottery making.

Map 23. Heritage Overlay Zone.



Trade and Industry Enhancement

Commercial development will also be adopted to further enhance Gubat's existing position as a center of commerce, health, education, and social services. Further, the presence of communication, postal, and courier facilities are additional services that make Gubat frequented by out-of-town visitors from neighboring municipalities of Prieto Diaz, Casiguran, Bulusan, and Barcelona. The emerging coastal tourism areas in Gubat could be further enhanced by integrating sustainable and commercial development, including potential complementary tourism and agri-fishery projects with neighboring coastal municipalities.

The ongoing improvement of the public market and its expansion to include national brands is strategic in boosting the town as a trade and center of commerce, therefore expanding further its customer base. Commercial development could also address the low price of agricultural products, lack of job opportunities, monopoly of business, and a lack of capital.

Commercial development could further existing opportunities in health, such as continuing to improve the hospital and other health services, education, including the continued rehabilitation of existing classrooms and the building of new classrooms in areas of need and improving existing buildings for commercial enterprise such as the market and increasing attraction of new commercial enterprises. Improving transport, in particular implementing a transport terminal and reducing congestion in the center, could improve accessibility, enable employment, create larger markets for existing businesses and save time and costs for the community and business. Greater mobility in general for the community contributes to better opportunities for social and economic development.

Commercial development, like agricultural development, will help to mitigate unemployment and underemployment through the increase of economic activity and address the issue of increasing poverty in Gubat.

Development in Gubat with a commercial thrust would lead to improved health, education, commercial, and tourism opportunities with more capacity to serve both a growing local population and increased patronage from visitors. Local business and commercial enterprise, including tourism services, would increase to a larger proportion of revenue generated in the municipality, employ a larger proportion of the population, and provide more opportunities for social and economic inclusion. The community would also have more options for employment beyond the local environment because of improved transport mobility.

Advantages identified by pursuing commercial development are:

- Generates employment
- Urbanization
- Increased revenue
- More investors
- More construction of buildings

The main advantage of pursuing commercial development is increased employment, revenue, and investment through capitalizing on existing urban potential. More construction of buildings would also provide opportunity for economic growth through increased business and enterprise.

Identified disadvantages are:

- River and stream pollution
- Overcrowding
- Traffic congestion
- General pollution

Traffic congestion and general pollution could be mitigated through the reduction of traffic in the *poblacion* and development of satellite transport terminals. Overcrowding in the *poblacion* could be mitigated by decentralizing the market and adding additional buildings, which while spreading density of people, would also help to reduce waste congestion of solid waste. Overcrowding in residential areas could be mitigated by placing capacity limits on residential zones, resettling informal settlers in already over-crowded areas, and implementing new residential zones with accompanying amenities.

Some key strategies to development commercially are:

- Development of the Triangle Growth Nodes and commercial areas outside the town center and current public market
- Vertical development in the existing public market
- Enhancement of existing commercial structures
  - Establish market improvement plan
- Strengthening strategic role
  - Upgrade existing health, commerce, and education facilities
  - Upgrade existing transport network and construct more transport terminals
- Commercial investment attraction
  - Update Municipal Investment and Revenue Codes
- Tourism development
  - Increase infrastructure and amenities at existing tourist sites
  - Increase sustainable development in surrounding areas

Agricultural Enterprises

Mangrove Crab Production

Mangrove crab culture in Gubat depends heavily on wild seed supply. The rich brackish water along estuaries and mangrove forests in coastal barangays of Gubat has made it a favorable ground for breeding of the King Crab species. Breeding season starts from August until March. During this time, over 540 crablet gatherers collect crablets in the wild that are sold to 20 stockers/viajeros all over Gubat. Harvesting of crablets from the wild is regulated through the Municipal Fisheries Ordinance. Specific provisions on the allowable size and corresponding fees were identified in the ordinance.

Mangrove crab of the King crab species from Gubat is of high quality which makes it one of the most-prized fishery products of the municipality. Consequently making mangrove production the most promising enterprise in Gubat. Crablets are exported during their juvenile stage. It is most popular among commercial mangrove crab growers from the cities of Pagadian and Roxas, Bulacan, Pampanga, Zamboanga and Bataan among others. As of December 2019, the total number of exported crablets amounted to 5,721,704 pieces which is valued at P125,600,025.00. Aside from crablets, some stockers/viajeros also transport mature crabs. Based on records of OMAg, exported crabs amounted to 35,136 kilograms valued at PH 19,833,800.00.

Danggit Processing

The Office of the Municipal Agriculturist (OMAg) has been in constant coordination with fisherfolk organizations. Strengthening these organizations through updating of their registrations with the DOLE was done while encouraging fisherfolk in other barangays to organize and be accredited. Moreover, OMAg links these fisherfolk organizations to various government agencies for workshops and training. In June 2021, the LGU, in collaboration with DTI, launched a Danggit Processing Training with the members of CotaNorteSur Gubat Fisherfolks Association (CNSGFA) as beneficiaries. The association then adopted danggit processing as one of their sources of income. Moreover, to help with their start-up, the LGU endorsed the CNSGFA and requested the DOST for a mechanical danggit dryer. After two months of operation, CNSGFA has produced a total of 38 kg dried danggit with local and tourist buyers. Temporarily, their products can be found on display in the RIC store within the municipal compound. Members also go around town to market their products. They are also planning to change their packaging into vacuum-sealed type to extend their product's shelf life.

The LGU has also funded for the fabrication and installation of six (6) fish cages along the coasts of Cogon and Balud del Sur. It will be stocked with milkfish fry and siganids for culture purposes. This project is in support of the danggit drying enterprise of CNSGFA. The association could make use of the siganids harvested from the fish cages as raw materials.

Seaweed Processing

The municipality of Gubat has 13 coastal barangays. However, only three barangays engage in seaweed culture namely, Bagacay, Tiris and Paco. As of 2019, there are 32 seaweed farmers in Bagacay, eight in Paco and ten in Tiris. Seaweed farmers from these barangays sell their produce both on a fresh and dry basis which are picked-up by buyers from Pto. Diaz and Masbate among others. In 2019, seaweed production on a fresh basis totaled to 1,661 kilograms while dried seaweeds reached up to 1,034 kilograms valued at P24,915.00 and P41,360.00, respectively.

Additionally, the BFAR source their propagules from local seaweed growers. Though not on a regular basis, this also helps farmers have an additional income. In 2020, propagules requested by BFAR averaged at two metric tons (2MT) valued at P26,00.00.

Aside from raw production, farmers from Bagacay also engage further in seaweed processing. The RIC Bagacay, composed of rural women, engages in seaweed achara making, and seaweed pansit. Their market includes local buyers and tourists.

Carabao Milk Production

Carabao upgrading is a regular program of the OMAg through artificial insemination utilizing Murrah-based semen from Philippine Carabao Center. Native carabaos are crossbred with Murrah-based buffalos which grow faster and produce more milk than native carabaos without compromising draftability and reproduction ability.

In 2020, the GSAC also launched their artificial insemination program to upgrade native carabaos of their farmer-members. They also contract with members to buy their produced milk. Aside from their members, they also connect with the LGU to identify farmers with upgraded carabaos with potential for milk production. Additional income derived from increase in milk production is expected to alleviate the economic status of farmers.

Strengthening Quality Education

The presence of the Bicol University Gubat Campus (BUGC), the only academic unit of Bicol University outside the province of Albay attracts students not only from Gubat but the whole province offering courses in agriculture, microfinance, entrepreneurship, and education. Moreover, Gubat has a complete range of learning institutions from preschool to tertiary schools, and a technical-vocational school.

The development of human capital is a key element in this strategy that can respond to other societal and development issues including poverty and unemployment, hence a push for more accessible and more relevant educational programs is needed. Recent education reforms, such as the K to 12 program and the Universal Access to Quality Tertiary Education, among others, have sought to boost enrollment levels, graduation rates, and mean years of schooling in elementary and secondary education, and to improve the quality of higher education.

Such reforms have the goal of revitalizing the country's current education system. With this, the town commits to make Gubatnons more globally competitive.

Some advantages in strengthening quality education include:

- Increase literacy rate
- Improve human capital
- Provide better opportunities for employment (lower unemployment, higher wages)
- Enhance social mobility, equity, and public health

Disadvantages identified were:

- Congestion surrounding the BUGC in Buenavista
- Land, water, noise pollution especially to adjacent tourism area in Buenavista
- Solid and liquid wastes management
- Increased daytime population
- Challenges to public safety and order

Some key strategies to strengthen quality education include:

- Expansion of BUGC in Buenavista to offer new courses including tourism, among others
- Construction of additional high schools in identified growth areas
- Improvement of road access and transportation network to educational facilities
- Development of vocational-technical education support facilities
- Development of research and development facilities
- Link techno-demo farms to educational institutions

C. Spatial Strategies

The spatial strategy of the municipality adopts the Philippine Development Plan and *Ambisyon Natin* 2040 national spatial strategy recognizing population, geography, and the role of town centers as engines of economic growth, with infrastructure providing efficient connectivity of a network of sustainable urban and rural communities.

Component Strategies

1. Build on the efficiencies and maximize the benefits of scale and agglomeration economies
   - decongest the town center
   - develop growth nodes
2. Connect settlements to form an efficient network
   - improve linkages among settlements and key production areas by connecting to growth centers
3. Make vulnerability reduction an integral part of development
   - reduce the risks of communities exposed to the threats of disasters
   - integrate nature-based solutions and engineering interventions
4. Apply the ecosystem approach to development
   - apply green growth concept in all development strategies

Mainstreaming Green Growth Principles into Local Development

The general strategy for greener growth is a combination of engineering interventions and structural design by bringing more efficient infrastructure to people (i.e. in energy, water, and transportation), introducing efficient technologies that can reduce costs and increase productivity (i.e. alternative sources of energy), and tackling societal issues associated with environmental degradation.

To manage and reduce the risks in the implementation of its development plan, it will follow an ecosystem-based approach, implement nature-based solutions, and recognize that the key to community resilience is through healthy, productive, and sustainably managed ecosystems including protecting our mangrove forests and planting more trees, enriching watersheds, and developing more green spaces.

With agriculture and fisheries as the town's primary income sources, it relies heavily on favorable climatic conditions to sustain its means of living. With climate hazards and extreme weather events exacerbated by global climate change, its economy and food security are at most risk. With this, intercropping and use of climate-resilient variety crops will be promoted; closed season for fishing *kuyog (padas)*, the prohibition of the use of illegal fishing methods such as *djakos,* and the trading regulation of the size of *langaw-langaw* (crablet) to conserve the remaining resources; and the declaration of marine protected areas and fish sanctuaries.

In tourism, some key strategies for sustainable tourism include creating a zoning plan, which will designate specific issues for different zones based on the most feasible economic, environmental, and tourism use i.e. marine sanctuary, coastal tourism, heritage zone, etc. This zoning plan will aid coastal resource planners and managers in the development of Gubat Bay and the use of foreshore and easement/salvage zones. It will also take into consideration the carrying capacity of tourism destinations.

Overall strategies will be climate-adaptive, regenerative, realistic, people-centered, gender-sensitive, and culturally-appropriate. This will reflect the specificities and assets of different places and is aligned to the ridge-to-reef planning framework. There are three general land use policy areas with corresponding specific land uses and regulations – protection, production, and buffer/s:

a) **Protection Areas.** Protection areas are private lands, public lands, and waters that are set aside for conservation, preservation, and rehabilitation because of their long-term strategic benefit and observed and projected impact of climate-related events and disasters to these areas. The general location of areas for conservation and protection are:

(1) Prime **agricultural lands** contribute to attaining food self-sufficiency. These are designated as key production areas and are protected from land conversion--except for areas identified for urban expansion in this CLUP.
(2) The **mangrove forest reserve zones**--The only forest areas that can be found in the municipality are those that grow along the seashore. These are the mangroves that grow abundantly in the coastal barangays of Rizal, Panganiban, Pinontingan, Cogon, Tiris, Paco, and Bagacay. A small area in Ariman covered with nipa palm trees, a mangrove associated species, has started to be planted with suitable mangrove species.
(3) **Water zones**--Create a zoning plan along the coastline of Gubat Bay, which will designate specific issues for different zones based on the most feasible economic, environmental, and tourism use i.e., marine sanctuary, seaweed farming, diving, fish cage culture, etc. This zoning plan will be a good tool to guide the coastal resource planners and managers in the development of Gubat Bay and the use of foreshore and easement/ salvage zones
(4) **Very high flood susceptibility areas** likely to be inundated by floods with depths of more than 1.5 meters during 25-year and 50-year event floods. Areas affected are Cogon, portions of Bagacay, Cota na Daco, Ariman, Buenavista, and Rizal. These areas are not suitable for urban development and human settlement and are “no-build zones,” except for the construction of flood control structures. The type of agriculture activities in these areas must be flood-adaptive.
(5) **Very high landslide susceptibility** or critical areas are landslide sites or areas with incipient landslides that are declared as “no-build-zones.” Areas with **high landslide susceptibility** are areas that are highly susceptible to landslides based on the evaluation of the different ground parameters such as rock type, geomorphology, slope gradient and gully heads. These areas are declared as “no-dwelling-zones.” These areas with critical slopes can be found in Lapinig, Nato, Tagaytay, Dita, Cabiguhan, Manapao, Casili, Sangat, Cabigaan, Villareal, Benguet, Togawe, Bentuco, and Tigkiw.
(6) The **riverbank easements and riparian buffer zones** of the inland waters of the municipality are protection policy areas. Areas within 20 meters of river banks in agricultural areas and 3 meters in urban areas are restricted areas. These areas are declared as “no dwelling zone” and “no build zone”, except for the construction of flood and erosion control structures.
(7) The areas with **cultural and historical value** for protection include built heritage sites in Pinontingan, Balud del Norte and Balud Del Sur, Luna-Candol, i.e., old *presidencia*, Monreal ruins, *Union Obrero*, Escurel-Sabater house, and *almacenes*, among others.

b) **Production Areas.** Production areas where all types of activities and uses can be conducted subject to the restrictions imposed by the Zoning Ordinance. The basic land uses and activities inside production and multiple land use areas are those identified for settlements, commercial, industrial, institutional, infrastructure, agriculture and production. The general locations for these development areas are:

(1) The **production agriculture** areas are areas outside the rice areas or SAFDZ and declared for agricultural use. These are the existing areas planted to perennial crops mostly coconuts and rice found in 35 barangays of Gubat.
(2) **Coastal tourism** activities shall be concentrated on the coastal barangays of the municipality. Farm tourism will be pursued in priority agricultural areas, while cultural and heritage conservation projects can be developed not only at the town center, but in other barangays in the municipality.
(3) **Agri-industrial**. Major agri-industrial areas for rice mills and processing facilities shall be located in identified agricultural production areas. Appropriate areas for existing and proposed rice mills shall be provided for in other rural barangays.
(4) **Industrial** areas are intended for medium-intensity manufacturing or production industries that may have medium pollutive impact but shall observe corresponding buffer and zoning requirements.
(5) An expanded **institutional** area will be established at Highway 59 in Barangay Ariman and Panganiban, which shall serve as a site to relocate existing and for future site of national and local government offices. Areas dedicated to **transport and utilities** will be developed for an integrated transport terminal that is off town center, as well as open space for **parks and recreational** areas in clustered barangays.

c) **Buffer Areas.** Buffer areas are used to separate agriculture areas from urban development activities and vice versa. They serve to minimize disturbance and population intrusion to agriculture while protecting settlement areas from possible effects of agricultural operations. Industrial/Residential buffer areas are required to separate residential land uses from designated industrial or agro-industrial. Buffer areas are also provided to separate pockets of habitat areas such as streams/creeks or river corridors and watersheds from any type of urban development.

(1) The **water easement** or riparian buffer areas is 20 meters in agricultural lands and 3 meters in urban areas throughout the entire length of water bodies (coast and riverbanks).
(2) Urban land use along the *población* and coastal barangays will be limited to low density residential, low density commercial, general institution, and agri-industrial uses.
(3) Buffer areas for industrial areas are production agriculture areas and the buffer areas for agri-industrial areas are protection and production agriculture areas.
(4) Public facility buffers for solid waste disposal facilities shall be green belt.

D. Development Concept and Structure Plan

The structure plan for Gubat is conceptualized based on its preferred development thrust and spatial strategies. The concept/structural plan pertains to the way future population and related activities are organized and distributed over the municipal territory. Through sieve mapping using GIS technology, several thematic maps were overlain to determine which areas are feasible for development or expansion, which areas are to be protected, conserved or preserved or should not be developed in order to ensure suitable environment for human habitat and self-sufficiency in agricultural production and for other types of development. A self-reliant population is of foremost concern for an efficient and prosperous community. The development concept of the municipality is anchored on the combination of concentric form of development, the linear type, and the formation of growth nodes/centers outside the *población* or the urban area. It will consist of the following:

Concentric form major urban center

Currently, economic growth occurs in the major urban center covering the *poblacion* and portions of Cogon in the north and Ariman in the south. The area incorporates and expands the existing *población*. The emphasis of development in the major urban center will therefore be in the expansion and integration of the existing and newly planned areas, together with environmental upgrading in the built-up areas (see Map 24).

a) The desired direction of growth of existing urban areas, considering the environmentally sensitive areas, agricultural lots, tourism development, education hub, as well as the desired production lands are as follows:

(1) The *poblacion* area takes the concentric form of development. Población as a major urban center will continue to function as the municipality's service center and the seat of local government administration. Because the población is expected to grow into a large sprawling urban center, the planned extension of the urban area will be directed to cover Cogon, Bagacay, Beriran, Payawin, Sta. Ana, and San Ignacio in the north; and Ariman, and Buenavista in the south. The expanded urban areas are expected to rationalize the circulation pattern and provide public open spaces in several locations and buffer zones in coastal areas. These public open spaces will be complemented by protected agricultural land in identified areas.

(2) To take into account the need for lands for present and future housing near the urban center, residential areas will expand in the general direction of: Sta. Ana, Beriran, San Ignacio, Carriedo, Casili, and Payawin to the north; and Bulacao, Ariman, Buenavista, and portions of Rizal to the south.

Linear type of development

This urban form exemplifies the strategy of concentrated dispersion. Future urban growth will be concentrated along the urban corridors that will be developed along both sides of the expanded diversion Highway 59 on barangays Beriran, Cota Na Daco, Manook, Luna-Candol, Paradijon, and Ariman. The measures of development from the road right-of-way will be defined and strictly enforced. Within the urban corridors, the activities will be a combination of commercial, trade, services, industry, and some parts for utilities and institutional use. There will be minimal open spaces within the corridors but plenty of it will be identified in the urban extension and in the new growth nodes.

Implications of the linear type of development

The concentration of development along both sides of the corridors of Highway 59:

- Facilities will provide faster access on delivery of social services;
- Monitoring and implementation of programs and projects will be easier;
- Initially, there will be high cost of infrastructure investments especially construction of utilities and facilities and road access in the primary growth centers;
- *Población* as the major urban center will continue to cater to both urban and rural population;
- Commerce and industry will be enhanced facilitating more employment; and
- Opportunities will spur in rural areas.

Growth nodes/centers

Gubat is a highly-urbanizing municipality, thus the need to identify new growth nodes/centers to accommodate development of any significant scale and to act as catchment areas in the delivery of social services to and from the población to their respective neighboring barangays (see Map 25).

(1) The *poblacion* barangays of Pinontingan, Paradijon, Panganiban, Luna-Candol, Manook, Cota na Daco, Balud Del Norte, and Balud Del Sur will remain as the urban core. It is the seat of governance, the central business district (CBD), and host to major institutional establishments. About 23 percent of the population resides in the *población* area. It has a good road network system conveniently linked to major thoroughfares. The *población* will remain as the major growth center of the municipality with the following barangays as immediate catchment areas: Ariman and Buenavista to the south; and Beriran, Cogon, Payawin, Sta, Ana, and San Ignacio to the north. To alleviate the congestion of existing CBD in the intensification of commercial activities, the following strategies shall be adopted:

- Retention of local and national government offices at the current municipal compound, and expansion of future government offices along the diversion road on Highway 59;
- Provision of more urban parks and open spaces;
- Provision of buffer zones for institutional areas; and
- Relocation of agri-industrial establishments (rice mills) outside of CBD.

(2) The barangays of Bulacao in the south, Payawin in the north, and the upper west portion of Bagacay compose the Triangle Growth Nodes of Gubat with the *población* still as the nucleus. These barangays are identified as such because of their large populations, presence of basic facilities such as schools, health stations, *talipapa*, recreational facilities such as basketball courts/gymnasia, and childhood development centers. They are also intended to serve as catchment areas to neighboring barangays not only to provide basic social services, but also to help decongest the *población*. The identification of these growth node areas is based on the climate and disaster risk assessment, taking into consideration the distance from coastal zones and are not located within hazard-prone areas.

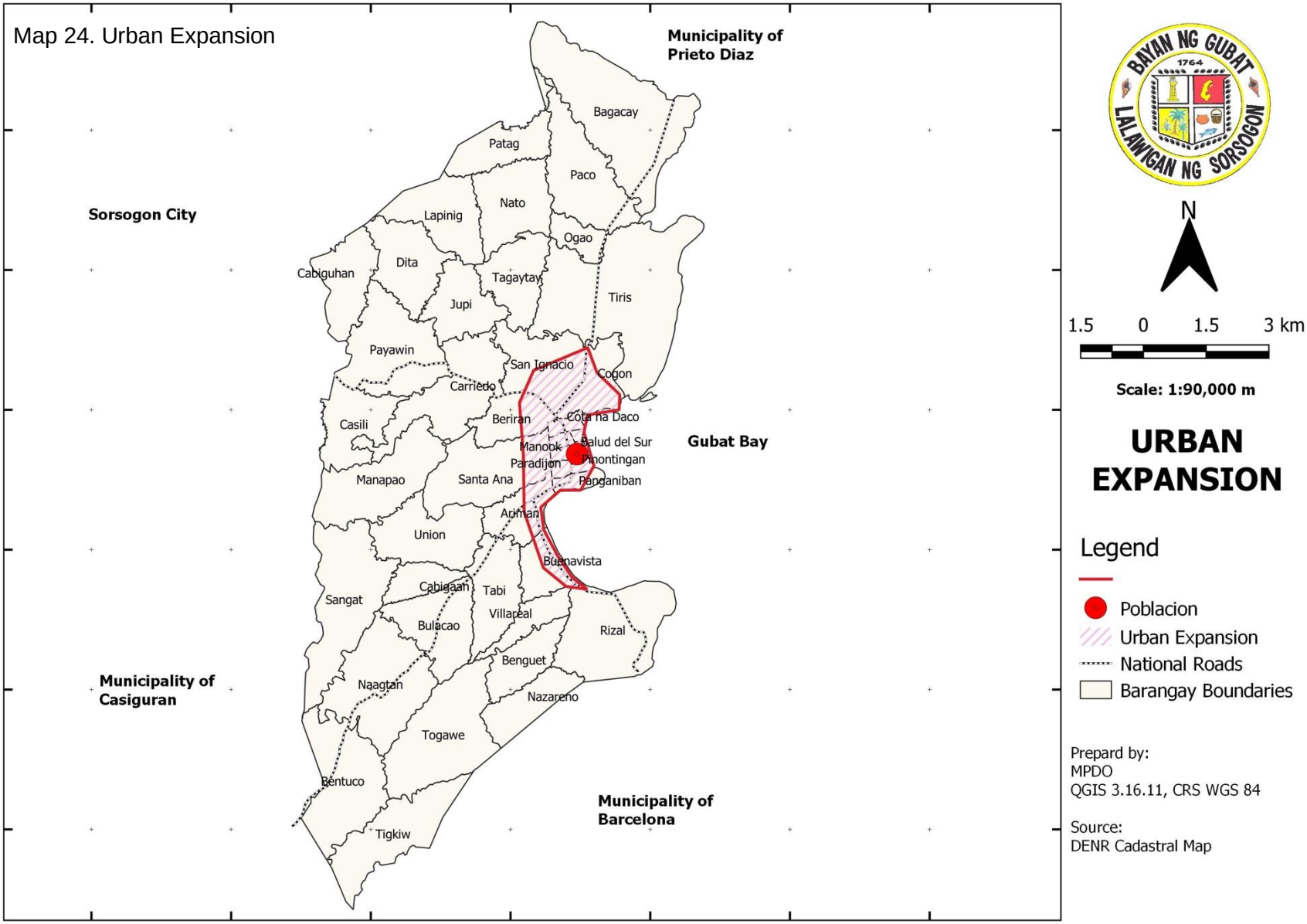
The Payawin growth node shall cater to its surrounding barangays including a portion of Abuyog in Sorsogon City. Meanwhile, the Bulacao growth node shall be the catchment for barangay in the vicinity and the neighboring barangays of Casiguran. The third growth node in Bagacay shall provide for the needs of its adjacent barangays and the next town of Prieto. Diaz. The *poblacion* shall remain as the commercial and trade nucleus, while extending its usual business to the towns of Bulusan and Barcelona.

(3) The coastal barangays of Ariman, Buenavista, Rizal, Panganiban, Pinontingan, Cogon, Tiris, Paco, and Bagacay will be developed as the major coastal tourism hub.

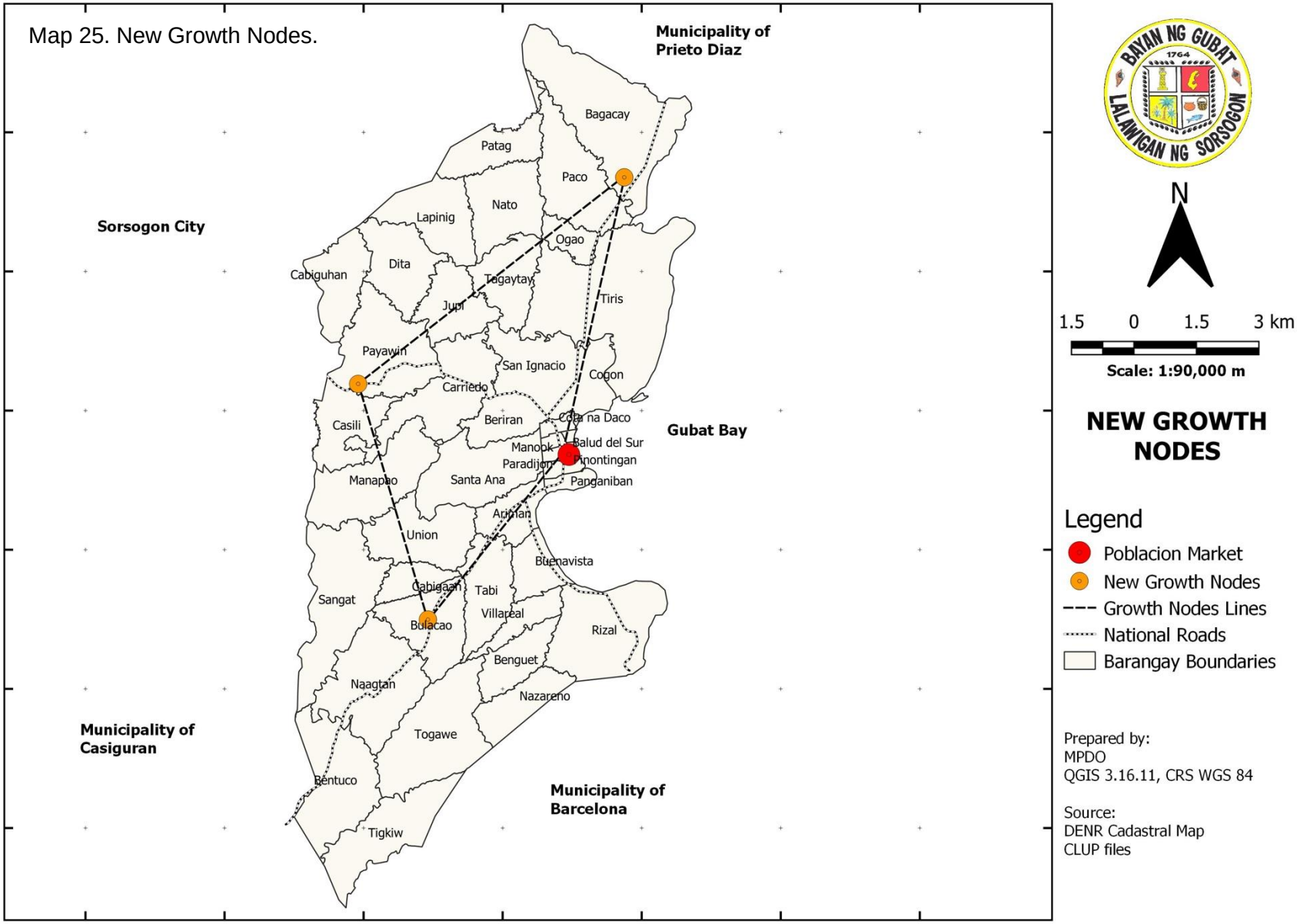
(4) Upland agricultural development will be developed in Tigkiw, Togawe, Nazareno, Benguet, Bentuco, Sangat, Casili, and Cabiguhan.

(5) The areas surrounding Highway 59 will host new government centers, new residential zones, and areas for commercial, utilities, and public transport use.

Map 24. Urban Expansion



Map 25. New Growth Nodes.



E. The Circulation System

Transportation network reflects the linkage among the identified development areas within the municipality, linkage with adjacent municipalities, as well as the province. Further, farm-to-market road improvement will be an important support initiative to barangay growth centers. The potential of these centers will be enhanced by sealed surface road connections to the coastal lowland and the trans-link major transportation routes. This will improve the movement of agricultural produce and open the potential of regular public transport services to the *población* and other major urban growth centers. Moreover, apart from decongesting the major thoroughfares of Manook and Quezon streets, alternate routes are envisioned to facilitate access in times of disasters.

To connect new and/or expanded diversion roads, they would be interlinked with the existing road networks to form grids therefore facilitating a more efficient access and would connect settlement to tourism, trade, agriculture, and education (see Maps 26 & 27).

Following the road standards to population ratio of the urban road network system, which is 2.4 kilometers per 1,000-population, the municipality currently needs an additional 19.60 kilometers of road in the *poblacion* area. By 2029, the projected need would be 57.27 kilometers of urban roads. This would require a total of 117.43 hectares of land.

(1) Proposed linkages for enhanced **circulation in agricultural areas** include road openings of: (1) Cabiguhan to Dita, (2) Carriedo to Beriran, (3) Nato to Lapinig, (4) Dita to Bilwang, Jupi, (5) National Road, Tiris to Tingting, Tiris (6) Tingting, Tiris to Tagaytay to Marok-barok, San Ignacio, (7) Brgy. Site, Paco to Bosing, Paco, (8) Marok-barok, San Ignacio to Biao, Carriedo, (9) Casili to Purok 5, Casili, (10) Paco to Ogao, (11) Bagacay National Road to New Growth Node, (12) Bagacay High School to Paco, (13) Apgo, Sta. Ana to Highway 59, (14) Sta. Ana to Apgo, Sta. Ana, (15) Beriran road to Relocation Site, San Ignacio, (16) Sta. Ana to Highway 59 to Aguinaldo Road (17) Beriran to Bonifacio Road, (18) Pange, Payawin to Cabiguhan, (19) Road fronting DPWH, Casili to Cabiguhan road, (20) Pange, Payawin to road fronting DPWH, (21) Karagti, Payawin to Casili Road, (22) Holy Family Subd., Cogon to Kalayukay Way, (23) Cogon Brgy. Hall to St. Anthony Subd., Cogon, (24) Ogao Centro to Purok 1, Ogao, National Highway shortcut (25) Manapao Circular Centro Road, (26) Lapinig to Patag Road, (27) Lapinig Barangay Hall to road going to Jupi, (28) Dita to boundary Sugod, Bacon, (29) Tagaytay to Ogao Road, (30) Road around *poblacion* Tagaytay, (31) Sitio Nasunugan, Nato to Ogao, (32) Boundary Cogon, National Road to San Ignacio – Jardinville to San Ignacio, (33) Nick Quinones property to Brgy. Site, San Ignacio, (34) Sitio Mahangin to Brgy. Site, San Ignacio, (35) Nato to Lapinig, (36) Purok 3 to Purok 5 (Casili), (37) Casili to Manapao, (38) Nato to Tagaytay, (39) Sta. Ana to Manapao, (40) Pange, Payawin to Bilwang, Jupi, (41) Pange, Payawin to Dita, (42) Jupi to San Ignacio, (43) Purok 1, Bagacay to Purok 2, Paco, (44) Biyong, Tagaytay to Sentro Tagaytay, (45) Lapinig to Jupi, (46) Carriedo to Casili, (47), Nato Tagaytay Road, (48) Nato to Patag, (49) secondary lateral roads connecting Holy Spirit Subdivision, Holy Family Subdivision and St. Anthony Subdivision of Cogon, and (50) Jardinville Subdivision and San Agustin compound to *Poblacion* of San Ignacio, (51) Beriran to Sta. Ana, (52) Manapao to Casili, and (53) road opening that goes from Villareal to Tabi, (54) Sitio Pili to Bagong Silang, Rizal, (55) Anibong, Bulacao to Brgy. Site, Bulacao, (56) Centro, Cabigaan to Anibong, Bulacao, (57) Villareal to Contod, Buenavista, (58) Villareal to Benguet, (59) Villareal to Maragadao, Togawe, (60) Ariman Crossing road going to socialized housing going Sta. Ana, (61) Cabigaan road going to Cabigaan Elem. School, (62)

Cabigaan to Union Road, (63) Arasyang, Union road around relocation site, (64) Circular road around *poblacion* Union, (65) Union road going to Manapao, (66) Patong, Naagtan to Kabuluan, Bentuco, (67) Naagtan to Odok, Sangat, (68) Naagtan to Anibong, Bulacao, (69) Naagtan to Togawe road, (70) Rizal National road to Bagong Silang, Rizal, (71) Sitio Lalinan to Dalingding, Rizal, (72) Bentuco Elem. School (back road) to Centro, Brgy. Site Bentuco, (73) Sitio Balete to Danlog, Tigkiw, (74) TigkiwSaday to Danlog, Tigkiw, (75) Kaanahawan, Togawe to Lucha, Bulacao, (76) Calundan, Union to Ariman, (77) Union to Cabigaan, (78) Tabi to Buenavista, (79) Cabigaan to Bulacao National High School to Cabigaan, (80) Sangat to Anibong, Bulacao, (81) Nazareno to Bagong Silang, Rizal, (82) Nazareno to Benguet (with bridge), (83) Binil-angan, Tabi to Togawe, (84) Malidlid, Bulacao to Tabi; and the enhancement of the coastal road in order to encourage more mangrove forests alongside it.

(2) Improvement of **circulation in the urban areas** will be achieved through the following required linkages: (1) Provision of a diversion road/Highway 59 bypass road, (2) Completion of the Coastal Road connecting to Padrique Street on one end and Escurel Street on the other end, (3) Pinontingan 1 and 2, Rizal St. to Coastal Road, (4) Balud del Sur, Rizal St. to Coastal Road, (5) Widening of Highway 59 bypass to Bonifacio Extension and Beriran, (6) Extension of Bonifacio St. to Highway 59 Bypass, (7) Opening of road from Bonifacio St. beside Salvador R. Encinas District Hospital to diversion road, (8) Bonifacio St. to Highway 59 bypass Road (Brgy. Paradijon – now only pathway), (9) Bonifacio St., beside GNHS to Highway 59 bypass road, (10) Extension of Calderon Street from Bonifacio Street to Highway 59, (11) Extension of Herrera Street to Highway 59, (12) Extension of Bonifacio Drive to Highway 59, (13) Road opening of Ferreras Road to Calderon St., (14) Opening of Monreal Street to Manook St., (15) Bonifacio Drive to Highway 59 Bypass Road, (16) Opening of road from Quezon St. to Burgos St (Brgy. Panganiban), (17) Burgos St. to Coastal Road (Brgy. Pinontingan), (18) Opening of Road connecting Sitio Gumang, Cota na Daco to Sitio Ipil-Ipil, Cogon, (19) Extension of Escurel Street from Manook Street to connect to Bonifacio Street, (20) Opening of road from Escurel St. to Panganiban St., (21) Extension of Monreal Street to connect to Manook Street, (22) Extension of Padrique Street to connect to Gubat bypass road, (23) Gumang Street (eastern side of Catholic Cemetery) to Extension of Zamora Street to connect to Coastal Road, (24) Opening of road from Quezon St (Philtranco) to Gumang (25) Road opening from Aguinaldo St. to San Antonio Village (26) Opening of road from Quezon St. to Burgos St. (Balud del Norte), (27) Opening of road beside Annunciation College connecting Panganiban Street to the Coastal Road, (28) Extension of the road (currently Herrera Street) to connect to Bonifacio Street in Paradijon, (29) Opening of road from Manook St. (water District) to Bonifacio St., (30) Road opening from Luna St. to Bonifacio St., (31) Road opening from Manook St., to PAMANA terminal, (32) Opening of road from Manook St. beside RJ Line to Herrera St., (33) Road opening from Manook St. lot fronting Rural Bank of San Jacinto to Quezon St., (34) Road opening from Bonifacio St. to Herrera St. (at the back of Caltex Gasoline Station), (35) Road opening from Padrique St. to Aguinaldo St (Balud del Norte), (36) Road opening from Manook St. beside South Star Store to Luna Street, (37) Road opening from Calderon St (interior) to Bonifacio Street, (38) Road opening from Manook Street to Quezon Street (Brgy. Manook), (39) Road opening from Zulueta St. to Municipal Compound, (40) Widening of Quezon Street, (41) Construction of shoulders and sidewalks along municipal Roads, provisional accessibility for PWD in accordance with RA 344 also known as the Accessibility Law (see Map 26 & 27).

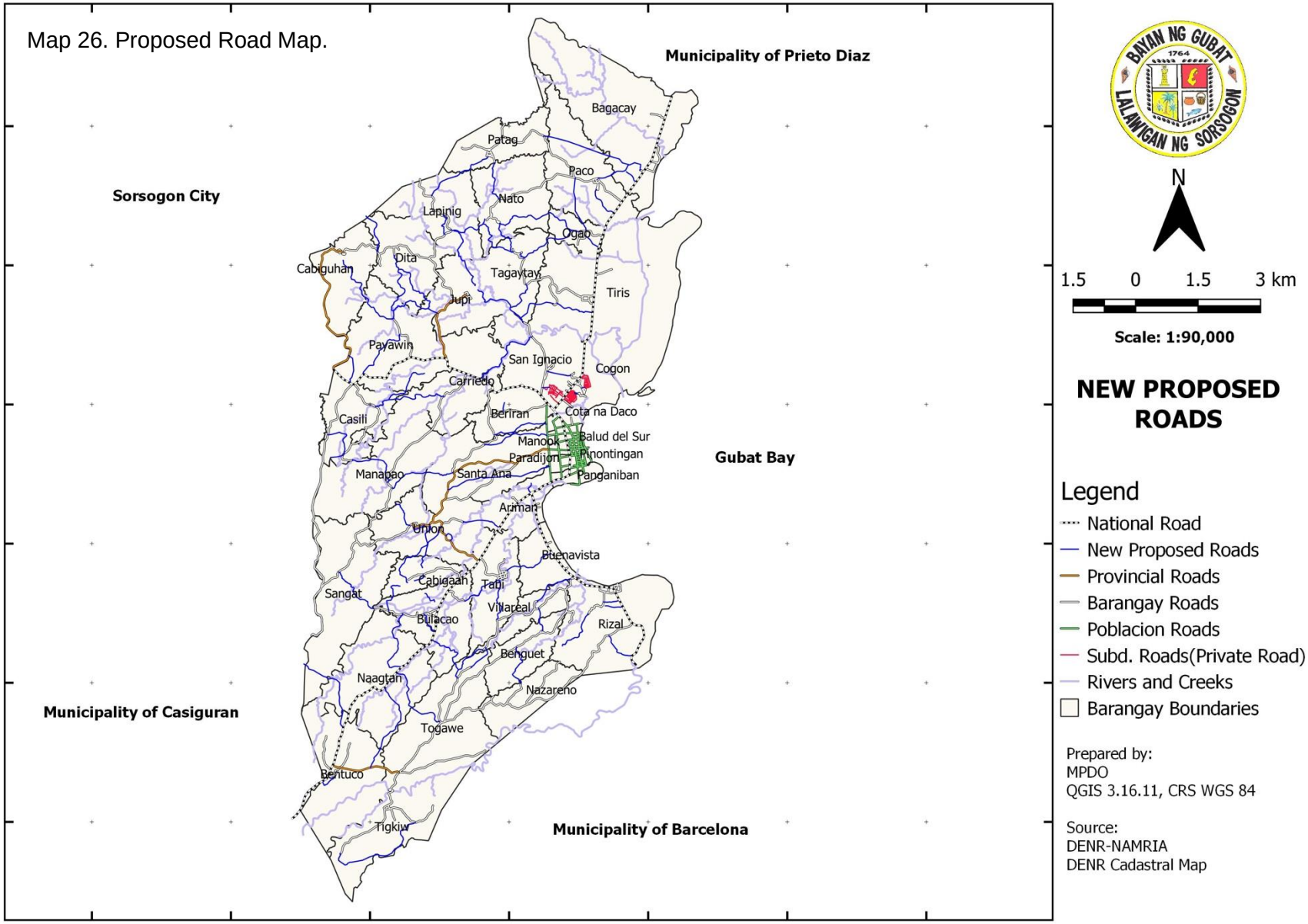
(3) Proposed **circulation for existing and expansion areas of residential areas** includes: access roads in Gumang bypassing Sitio Ipil-ipil; PAMANA Terminal to Bonifacio St.; Bonifacio Drive to Highway 59; Sitio Malidlid to Bulacao center; Tabi to Buenavista; and Nazareno to Rizal.

(4) **Prohibition** of **construction of road networks encroaching the protected coastal tourism areas,** but improvement of circulation networks to potential ecotourism sites such as Liyang caves in Bagacay, Bentuco, Nazareno, Naagtan; and Cogon to *Kalayukay.*

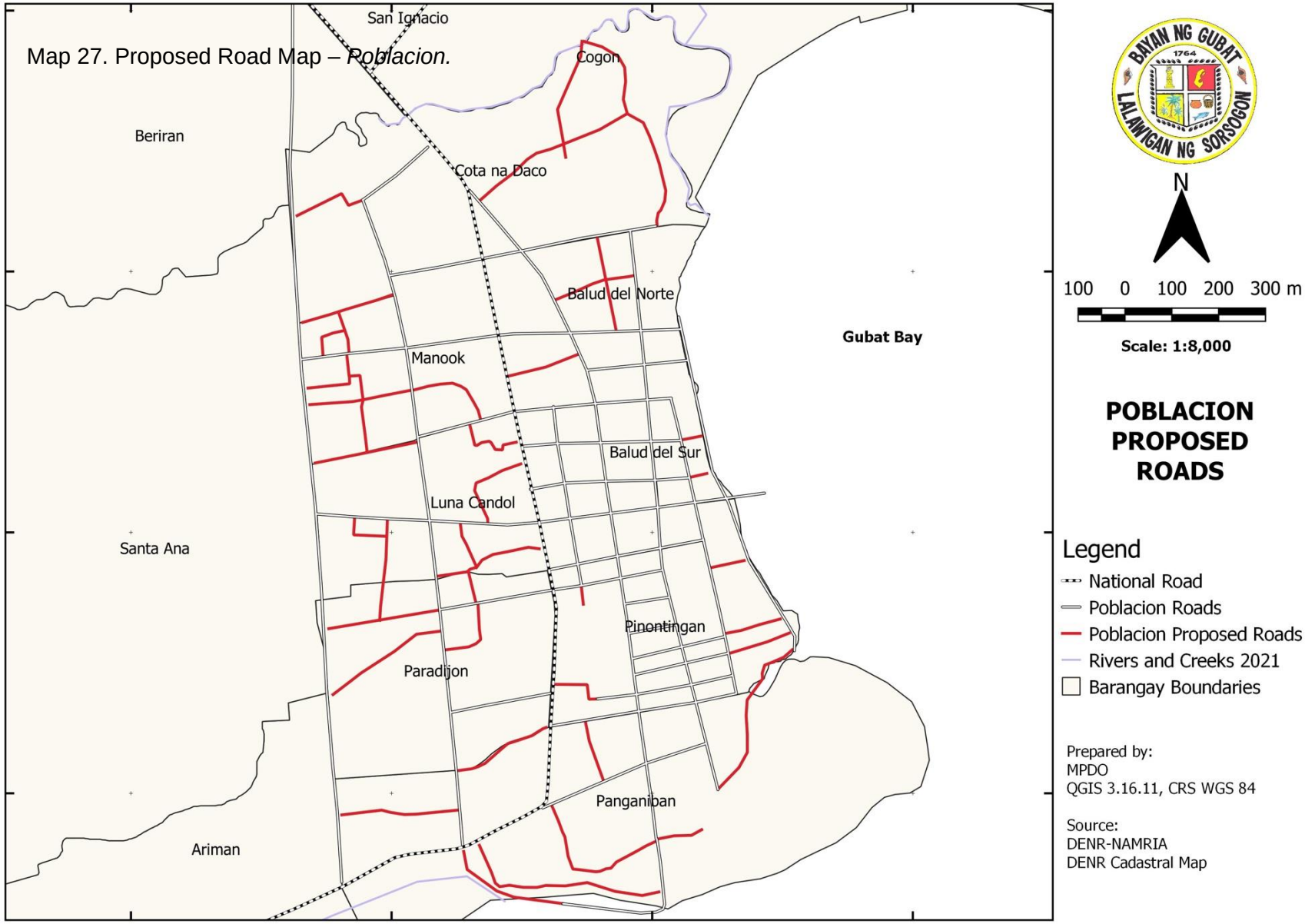
(5) Construction of a central **integrated transport terminal** along the diversion road on Highway 59 in Barangay Sta. Ana.

(6) Construction of **satellite transport terminals** in barangays Bagacay, Bentuco, Casili, and Rizal.

Map 26. Proposed Road Map.



Map 27. Proposed Road Map – *Poblacion.*



F. General Land Use Plan (2021 – 2029)

The major categories of land classification of the municipality are alienable and disposable land, and the mangrove that grows on coastal barangays. Agricultural, urban and rural land use and recreation are the major capabilities of land in the municipality.

Agricultural lands occupy the major part of the municipality's landscape, with a total area of 9,119.71 hectares or 79.40 percent of the total land area. Agricultural lands can be found in all barangays and small portions in the urban barangays of Luna-Candol, Paradijon, and Panganiban. These are primarily devoted to permanent crops like palay, coconut, and other crops. High value crops like vegetables, citrus, fruit trees, banana, and root crops are found in areas not planted to permanent crops or intercropped on coconut lands.

General residential areas cover 848.30 hectares, while 60.04 hectares is allotted for socialized housing. Commercial and institutional areas sprawl over 109.37 hectares and 103.26 hectares, respectively. There are 48.38 hectares devoted for tourism purposes, 14.90 hectares for industrial, 17.55 hectares for agri-industrial purpose, 16.21 hectares for cemeteries and 37.58 hectares for parks, sports, and recreation. The controlled dumpsite located at Tagaytay has an area of 5.25 hectares. Mangrove forests are spread over an area of 551.49 hectares.

Table 18. Land Allowable Use.

Land Use Categories/ Sub-Categories	Location and Area	Description and Land Use Policies
Forest Reserve: 15.92 hectares		
Forest Reserve	● Watershed area of Bentuco, Bulacao, Manapao, Nazareno, Ogao, Sangat, and Villareal	● Lands of the public domain, which have been the subject of the present system of classification and determined to be needed for forest purposes ● Man-made forests to be grown to protect watershed
Agriculture – Production: 1,202.27 hectares		
Crops	● Lands planted to perennial crops mostly coconuts found in 34 barangays; and rice found in 35 barangays	● Total agricultural areas will decrease from the existing 9,884.33 hectares to 9,119.71hectares or a difference of 764.62hectares of which crops planted were rice and coconut. The decrease will be due to reclassification of agricultural land into other uses. Total production area is 1,202.27 hectares. ● Agricultural lands outside of SAFDZ and declared for production agriculture use and may be converted to other use ● Coconut areas with cover mix of *abaca*, cacao, turmeric, pili, corn, pineapple and other crops ● Allowable uses include those for SAFDZ, poultry and piggery, pastoral activities, rice mills (single pass) and warehouses, agricultural research facilities, nurseries, slaughterhouse ● Farm and other agri-tourism activities

Agriculture – Protection: 7,917.44 hectares		
Strategic Agriculture and Fisheries Development Zone (SAFDZ)	● Lands planted to perennial crops mostly coconuts found in 34 barangays; and rice found in 35 barangays	● Allowable uses are cultivation of rice and other staple crops, growing of diversified fruit trees, fishponds, backyard livestock raising, single-detached dwellings, customary agriculture support facilities, farmhouses, home business and home industries
Agri-Industrial: 17.55 hectares		
Agri-Industrial	● Payawin, Bagacay, Bentuco, Cabigaan, Jupi, San Ignacio, Sangat, Tabi and Union	● Existing rice mills in the *poblacion* areas which will be non-conforming to land use to this CLUP will be relocated to designated agri-industrial areas ● An area intended primarily for integrated farm operations and related product processing activities such as mills, warehouses, manufacturing, processing, factories and slaughterhouses ● Proposed agricultural processing centers will be sited in the designated agri-industrial areas ● Slaughterhouse to Double A standard ● Seaweed processing center – drying facility ● Fishery product and food processing ● Community fish landing centers
Residential: 848.30 hectares		
General Residential	● All existing residential areas in urban and rural barangays ● Expansion areas for urban housing needs will be in Bagacay, Bentuco, Cogon, Beriran, Sta. Ana, San Ignacio, Bulacao, Cabigaan, Carriedo, Casili, Dita, Jupi, Naagtan, Nato, Nazareno, Paco, Rizal, Sangat, Sta. Ana, Tabi, Tagaytay, Buenavista, Ariman, and Payawin,	● An area intended principally for dwelling/housing purposes ● Allowable uses are single-detached and semi-detached dwelling units, townhouses, apartments, residential condominium, subdivisions, boarding houses, dormitories, pension houses, hotel apartments or apartels, hotels, museums, libraries, home occupation for the practice of one's profession, home industry classified as cottage industry, recreational facilities for the exclusive use of the members of the family residing within the premises, parks and open spaces, nursery/elementary school, high school, vocational school, tutorial services, sports club, religious use, multi-purpose/barangay hall, clinic, nursing and convalescing home, health center, plant nursery, parking buildings (aboveground/underground), and customary accessory uses incidental to any of the principal uses ● Expansion of urban residential areas to all barangays except those located along the shoreline and riverbanks

		● Residential areas will increase from 565.68 hectares to 848.30 hectares. This area is intended to accommodate the future demand for housing such as the projected increase in households of the municipality, the families that are located in danger/hazard-prone areas and the informal settlers. These residential areas are also expected to sprout around the proposed growth nodes/centers, along the major transportation routes, and the expansion of Bicol University Gubat campus
Socialized Housing: 60.04 hectares		
Socialized Housing	● Existing NHA resettlement – 1 hectare in San Ignacio ● A socialized housing project is proposed to be located in Ariman,Bagacay,Bentuco,Bulacao,Beriran,Carriedo,Casili,Cogon,Dita,Jupi,Naagtan,Nazareno,Pacio,Rizal(Portion of south of sitio Dalingding), San Ignacio, Tiris, Sta Ana	● Areas designated to housing projects to be undertaken by the government or private sector for the informal settlers and double-up households
Commercial: 109.37 hectares		
General Commercial	● Ariman, Bagacay, Buenavista, Balud del Sur, Beriran, Bulacao, Cogon, Cota na Daco, Luna-Candol, Manook, Panganiban, Paradijon, Payawin, Pinontingan, San Ignacio, Sta. Ana	● The commercial area will increase from 22.55 hectares to 109.37 hectares. The increase is due to expansion of commercial establishments in the urban core and the establishment of satellite markets in Bagacay, Payawin, and Bulacao. ● An area intended for trading/services/business purposes ● Allowable uses are wholesale stores, wet and dry markets, shopping center, malls and supermarkets, retail stores and shops, food market and shops, product showroom/display store, warehouse/storage facility for non-pollutive/non-hazardous finished products, personal service shops, bayad centers, laundries, internet café and cyber stations, photo/video, lights and sounds services, catering services, event

		planners, water stations, courier services, security agencies, janitorial services, travel agencies, repair shops, recreational centers/establishments, restaurants and other eateries, bars, sing–along lounges, bistros, pubs, beer gardens, disco, dance halls, lotto terminals, off-fronton, on-line bingo outlets and off-track betting stations, parks, playgrounds, pocket parks, parkways, promenades and play lots, plant nurseries, vocational/technical schools, special education (SPED) school, short term special education, embassies/ consulates, libraries/museums, exhibit halls, convention centers and related facilities, financial institutions/services, offices, business process outsourcing services, radio and television stations, parking lots, garage facilities, parking buildings (aboveground/underground), transportation terminals/garage with and without repair, display for cars, tractors, etc., motor pool, hauling services and garage terminals for trucks, tow trucks and buses, auto repair, tire, vulcanizing shops and car wash, auto sales and rentals, automotive handicraft, accessory and spare parts shops, marine craft and aircraft sales yards, gasoline filling stations/service stations, vehicle emission testing center, machinery display shop/center, machine shop service operation, welding shops, medium scale junk shop, engraving, photo developing and printing shops, printing, publication and graphics shops, manufacture of insignia, badges and similar emblems except metal, glassware and metalware stores, household equipment and appliances, signboard and streamer painting and silk screening, printing/typesetting, copiers and duplicating services, recording and film laboratories, construction supply stores/ depots, gravel, sand and concrete hollow block (CHB) stores, lumber/hardware, paint stores without bulk handling, gardens and landscaping supply/contractors, manufacture of ice, ice blocks, cubes, tubes, crushed except dry ice, lechon stores, chicharon factory,

		biscuit factory—manufacture of biscuits, cookies, crackers and other similar dried bakery products, doughnut and hopia factory, shops repacking of food products, manufacture of wood furniture including upholstered, manufacture of rattan furniture including upholstered, manufacture of box beds and mattresses, funeral parlors (all categories), commercial condominium (with residential units in upper floors), commercial housing, all uses allowed in all Residential Zones, and customary accessory uses incidental to any of the above uses
Industrial: 14.90 hectares		
	● Development of an area in Cabiguhan with standard buffer distance away from residential, agricultural, institutional, and commercial areas	● Intended for medium-intensity manufacturing or production industries that are pollutive/non-hazardous and/or pollutive/hazardous
Institutional: 103.26 hectares		
Institutional	● Existing areas of institutional establishments such as government offices, hospitals, schools, academic centers and places of worship in Pinontingan and Ariman ● Expansion of institutional areas proposed along Highway 59 in Barangay Ariman and Panganiban ● Construction of Bagacay ES Annex, Payawin NHS, Evacuation centers, barangay health centers, ALS Multipurpose Halls ● Expansion of academic facilities will be located in Buenavista	● An area intended principally for general type of institutional establishments ● Future offices of national government agencies and local government unit can be located along Highway 59 ● All institutional establishments should comply with the requirements of existing laws and regulations (building permit, fire code) ● Construction of climate-adaptive/resilient institutional establishments ● Institutional establishments should be gender-sensitive and must comply with the guidelines of the accessibility law ● Green technology should be observed in construction of new institutional facilities ● ECCD areas will expand to include premises for playgrounds

Parks and Recreation: 37.58 hectares		
Parks and Recreation	● Existing barangay open air auditoriums and basketball courts ● Christ the King Park in Pinontingan ● Development of Municipal Sports Complex in Beriran ● Development of a Municipal Park inside the Municipal compound in Pinontingan ● Construction of a Cultural Center in the *poblacion* ● Conversion of Dumpsite to botanical garden at Brgy. Tagaytay ● Construction of multi-purpose covered courts, parks and playgrounds to be used by clusters of barangays ● Relocation of Cockpit Arena to Carriedo	● Allowable uses are parks, playgrounds, promenades, open-air or outdoor activities facilities, ball courts, memorial/shrine monuments, parking spaces ● Sports and recreation facilities should not be constructed on hazard-prone areas
Cemetery/Memorial Park: 16.21 hectares		
Cemetery/ Memorial Park	● Existing Gubat Catholic Cemetery in Cota na Daco and public cemetery in Buenavista, Togawe, and Bentuco ● Establishment of Interfaith Cemetery in Sitio Gumang ● Expansion of existing cemeteries	● An area intended for the interment of the dead ● Construction of new cemetery should follow the guidelines of PD 856 (Sanitation Code of the Philippines) ● Vertical development in existing cemetery ● Construction of columbarium in existing cemeteries
Tourism Area: 48.38 hectares		
Tourism	● Ariman, Rizal, Cogon, and Buenavista will function as the tourism growth hub ● Gubat Bay as coastal tourism area	● No major tourism project shall be undertaken without the compliance to Municipal Tourism Council and/or DOT standards and other concerned government agencies guidelines ● Allowable uses are agri/farm tourism, resorts, tree parks and botanical

	● Handawan island, Rizal, Panganbian, Pinotingan, Tiris, and Cogon for mangrove tourism ● Bagacay, Rizal, Pinontingan, Panganiban as potential dive sites ● Heritage site in areas in Cota na Daco, Pinontingan, Balud del Sur, Luna Candol, Balud del Norte (Casa Escurel, Union Obrero de Gubat Building, Encinas House, Saint Anthony de Padua Church, Portas Mansion, Gabaldon Building inside Gubat North Central School, Old Presidencia (Bicol University), Monreal Ruins, and Almacene) ● Farm tourism areas - Bagacay, Tiris, Buenavista, Carriedo, Payawin, Cogon	gardens, tourism accommodation facilities, souvenir shops, outdoor sports activities, food production and processing for tourism and parking areas, cultural and heritage tourism, culinary experience, boardwalks, dining facilities, recreation rental equipment shops, retail shops ● Foreshore use is subject to the Municipal Tourism Code and FLA ● The natural environment of eco-tourism sites shall be preserved, and the materials and design of facilities should blend with the natural environment ● Subject to existing national laws and local ordinances on tourism, environment, fisheries, and other applicable laws
Utilities, Transportation, and Services: 16.00 hectares		
Utilities, Transportation, and Services	● Existing telecommunication towers in Luna-Candol, Manook, Sta. Ana, and Carriedo; Proposed -- Buenavista, Paco, Payawin, Bulacao ● PAMANA Terminal in Paradijon ● Proposed Central Integrated Transport Terminal in Sta. Ana, and satellite terminals in Bagacay, Bentuco, Casili, Rizal, Luna-Candol	● An area designated for low-to-high density community support functions such as terminals, power facilities, wastewater facilities, telecommunication facilities ● The existing solid waste disposal facility in Tagaytay shall be upgraded to a sanitary landfill ● Establishment of sanitary landfills shall be in accordance with the guidelines as provided in the IRR of RA 9003 ● Measures will be put in place to reduce the waste being disposed at the landfill ● Post-Closure rehabilitation measures will be put in place for closed disposal sites ● Trees will serve as buffer zones for the disposal facility

	● Existing solid waste disposal facility in Tagaytay:1.12 hectare ● Proposed sanitary landfill site in Tagaytay: 5.25 hectares ● Proposed water spring sources in Bentuco, Bulacao, Manapao, Nazareno, Ogao, Sangat, and Villareal ● Existing SORECO II Substation in Beriran ● Proposed SORECO II Substation in Buenavista	
Mineral: 2.80 hectares		
Quarry	● Landslide areas in Union, Villareal, Lapinig, Sitio Tagaytay (Jupi), Manapao	● The process of extracting, removing and disposing quarry resources found on or near the surface of private or public land such as, but not limited to andesite, basalt, conglomerate, coral sand, diatomaceous earth, diorite, decorative stones, gabbro, granite, limestone, marble, marl, red burning clays for potteries and bricks, rhyolite, rock phosphate, sandstone, serpentine, shale, tuff, volcanic cinders, and volcanic glass ● Quarrying activities will be confined to minor quarry activities with appropriate permits

G. Water Use Plan

Table 19. Establishment of Water Clusters.

Established Clusters	Barangays Covered
Cluster 1	Rizal, Buenavista, Ariman
Cluster 2	Panganiban, Pinontingan, Balud Sur, Balud Norte, Cota na Daco
Cluster 3	Cogon, Tiris, Ogao, Paco, Bagacay

The municipal waters of Gubat are zoned following the six major coastal zones, determined in harmony and to complement with the overall bay-wide zoning framework, without prejudice to additional zones that may later be identified and established. The zonation map formulated and generated is a result of consultation among the stakeholders and validated in the field (see Map 27).

The municipal waters shall be designated into the following zones:

Zone 1 - Protected Zone
Zone 2 - Tourism Zone
Zone 3 - Stationary Fishing Zone
Zone 4 - Navigational Zone
Zone 5 - Docking/Landing Zone
Zone 6 - Mobile Fishing Zone

Protected Zones

These zones include sub-zones and other sites identified and reserved for protection of critical habitats, marine species and organism(s). They include those protected areas declared before the enactment of the Municipal Fisheries Ordinance and those that may later be declared by subsequent Ordinance.

Fish Sanctuary

There are two existing fish sanctuaries in the municipality declared under Municipal Ordinance No. 003, series of 2012. The Ragnas Fish Sanctuary covers an area of 16 hectares and located along Barangay Bagacay, while the Namantaw Fish Sanctuary covers an area of 15.7 hectares and located along Barangay Rizal.

There is a proposed Marine Protected Area along Barangay Pinontingan. Its core zone covers 16.06 hectares and includes seagrass and coral reefs.

Stationary Fishing Zone

For the enjoyment of the municipal fisherfolk, a stationary zone is also assigned. The stationary zone covers a total area of 1,130.88 hectares, excluding the overlapping navigational zones, and identified as areas for fish corral construction, fish traps and pots, fry gathering areas, gleaning, and areas for *atras* (pull net), a hand-held scoop net used in catching fingerlings that is lowered into the water without touching the seafloor and actively pulled backward.

Mariculture Zone

A mariculture zone is assigned in portions of coastal waters along the barangays of Bagacay, Cogon, Cota na Daco, and Rizal covering a total area of 112.83 hectares. The areas will be utilized for mariculture activities including seaweed farming and fish cage culture.

Tourism Zone

As a policy to promote coastal tourism in the municipality, portions along Barangays Ariman, Buenavista, and Rizal are designated as tourism zone covering a total area of 113.27 hectares.

Navigational Zone

Maritime zone of the municipality is composed of areas in Bagacay--Danao, Karayat, Muwalbuwal, Pasabayan, Sabang; Paco–Ogao, Tiris, Cogon, Cota na Daco, Balud Del Norte, Balud Del Sur, Pinontingan, Panganiban, Ariman, Buenavista, and Rizal.

Docking Zone

Every coastal barangay shall have a designated docking zone(s).

Mobile Fishing Zone

Fishing activities allowed in the mobile zone are subject to the limitations set by the national laws and the municipal fisheries ordinance.

The municipality has no categorized forestland. Watersheds are part of the municipality's agricultural lands. Deep wells utilization is an augmentation measure of GWD from the drastic low water production from the watersheds due to the devastating effect of the typhoons that ravaged the municipality in past years.

Map 28. Water Use Map.

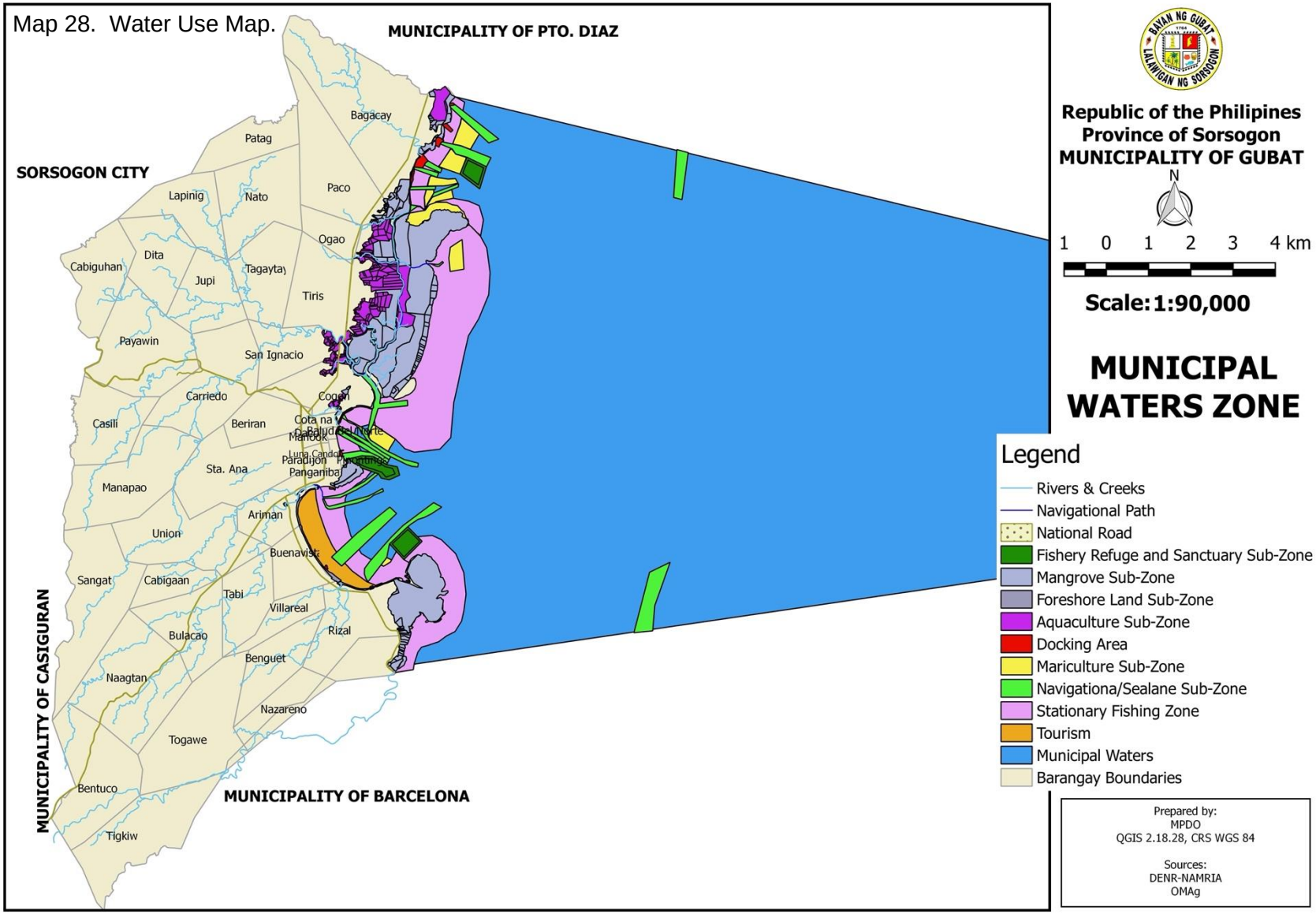


Table 20. Water Zone Allowable Use.

Water Use Categories/ Sub-Categories	Location and Area	Description and Water Use Policies
Municipal Waters: **18,980 hectares**		
Fishery Refuge and Sanctuary Sub-Zone	Along the coast of Bagacay, Pinontingan, and Rizal **47.76 hectares**	● an area within the Municipal Waters Zone of the municipality "where fishing or other forms of activities, which may damage the ecosystem of the area is prohibited and human access may be restricted.
Foreshore Land Sub Zone	Ariman, Bagacay, Buenavista, Cogon, Panganiban, Rizal **6.00 hectares**	● an area within the Municipal Waters Zone of the municipality defined as a "string of land margining a body of water; the part usually at the seaward margin of a low tide terrace and the upper limit of wave wash at high tide usually marked by a beach scarp or berm."
Aquaculture Sub Zones	Bagacay, Tiris, Paco, Cogon, San Ignacio **223.64 hectares**	● an area within the Municipal Waters Zone of a municipality designated for "fishery operations involving all forms of raising and culturing fish and other fishery species in fresh, brackish and marine water areas"
Mangrove Zone	The only forest areas that can be found in the municipality are the mangroves that grow abundantly in the coastal barangays of Rizal, Panganiban, Pinontingan, Cogon, Tiris, Paco, and Bagacay, and the nipa palms, considered to be mangrove associates, in barangay Ariman. **551.49 hectares**	● Allowable uses are reforestation, recreational tourism, educational or environmental awareness values and scientific studies that do not involve gathering of species or any alteration in the area; ● No permanent buildings or structures are allowed.
Mariculture Zone	Along the coast of Bagacay, Tiris, Cogon, Cota na Daco, and Rizal **112.83 hectares**	● an area "designed to produce fisheries through sea cage culture such as *bangus*, siganids, groupers, red snappers, seaweeds farming, aquasilviculture, mussel culture, oyster culture, sea ranching of lobsters and seahorses in coral reefs and seagrass areas, and others that may be developed through the continuing research and development program of the Bureau of Fisheries and Aquatic Resources (BFAR) and other institutions.

Stationary Fishing Zone	Along the coast of Bagacay, Paco, Tiris, Cogon, Cota na Daco, Balud del Norte, Balud del Sur, Panganiban, Ariman, Buenavista, and Rizal, Paco **1,130.88 hectares**	● an area within the Municipal Waters where only stationary/passive fishing gears, a type of fishing gear characterized by its nature of being deployed in a fixed or particular area, are allowed to operate
Mobile Fishing Zone	Along the coast of Ariman, Buenavista, Rizal, Panganiban, Pinontingan, Tiris, Cogon, Cota na Daco, Balud del Sur and Balud del Norte Paco, and Bagacay **17,298.55**	● an area within the Municipal Waters Zone of a municipality where only municipal fishing, which refers to fishing using vessels of three (3) gross tons or less within the 15-kilometer distance from the shoreline as defined in the Fisheries Code, is allowed
Tourism	Along the coast of Ariman, Buenavista, Rizal **113.27 hectares**	● an area within the Municipal Waters where only coastal tourism activities are allowed
Sealane Sub-Zones	Along the coast of Bagacay, Paco, Tiris, Cogon, Cota Na Daco, Balud Del Norte, Balud del Sur, Pinontingan, Ariman, Panganiban, Buenavista, Rizal and portion of Tingting tributary at Tiris **252.47 hectares**	● an area within the Municipal Waters Zone of a municipality that is designated as an established route for water vessels traversing the municipal waters. Also referred to as Navigational Lane.
Docking Sub-Zones	On or along the coast of Bagacay, Paco, Ogao, Tiris, Cogon, Cota Na Daco, Balud del Norte, Balud del Sur, Pinontingan, Panganiban, Ariman, Buenavista, Rizal **24.25 hectares**	● a designated area where municipal fishing boats and fishing vessels are secured and protected.
Rivers and Creeks	Bulacao, Basiao, Tingting	● Rivers and riparian buffer zones are protection policy areas ● Areas within 20 meters of river banks in agricultural areas and three meters in urban areas are restricted areas and declared as “no-dwelling zone” and “no-build zone,” except for the construction of flood and erosion control structures ● Allowable uses are regulated fishing and aquaculture, tourism ● Quarrying activities will be confined to minor quarry activities with appropriate permits ● Water source for irrigation ● Potable water source ● Renewable energy

H. Land and Water Use Policies

The policies will serve as a guide for the enactment of a zoning ordinance and other regulatory measures embodying the policies for each of the areas delineated in the previous chapter.

Land Use Policies

1. **Cross-Cutting Policies.** The following cross-cutting strategies will serve as input development controls, zoning and implementation agreements for the land use management zone category and sub-categories.

   - Area regulations in all land use categories shall conform to the applicable minimum requirements of existing laws, codes, and regulations.
   - A mechanism granting exceptions and variances shall be put in place to reduce the possible harshness in the enforcement of CLUP.
   - Non-Conforming uses, buildings and structures may be continued, although such uses do not conform to this CLUP, but subject to conditions to be set forth in the Zoning Ordinance.
   - The provisions of this CLUP shall be enforced, through a Zoning Ordinance, by the Local Chief Executive through the Zoning Administrator who shall be appointed in accordance with existing rules and regulations.
   - Necessary changes in the LGU organization structure shall be made and institutional mechanisms shall be strengthened in order to effectively implement the CLUP and Zoning Ordinance.
   - Foreshore Lease Agreements (FLA) are under the jurisdiction of DENR. Co-management agreement between DENR and shall be established for effective enforcement and implementation of land use arrangements.
   - A Municipal Environment and Natural Resources Office shall be institutionalized in the LGU that shall take the lead in implementing and providing technical and administrative functions in environment management.
   - The IRR of the Local Environment Code shall be in-place and implemented
   - Environmental fees shall be institutionalized through local legislation to finance environmental PPAs.
   - Promotion and awareness campaign to all community stakeholders on biodiversity, watershed, forest and ENR conservation, protection and management shall be undertaken.
   - FFL and ENR laws and regulations such as Forestry Code, Clean Air Act, Water Code, NIPAS, Fisheries Code and shall be strictly enforced.
   - A Monitoring, Review and Evaluation (MRE) body shall be organized to develop MRE systems and procedures and conduct actual MRE vis-à-vis CLUP implementation
   - All agricultural lands reclassified in this CLUP for other uses shall not be prematurely converted. Applications for land conversion shall be submitted to the DAR for evaluation and final approval.
   - A Local Economic Investment and Promotions Office shall be strengthened that will encourage and sustain investments in the municipality.
   - Developments should not adversely affect existing irrigation facilities.
   - National roads shall have a road right of way (RROW) of not less than 20 meters, provincial roads shall have a RROW of not less than 15 meters and municipal roads shall have RROW of not less than 10 meters.
   - Regulations to prevent illegal settlements shall be passed through an ordinance.

- Buildings, institutions, establishments and public utilities should ensure compliance to BP 344 to enhance the mobility of persons with disabilities.
- Buildings, institutions, establishments and public utilities should be GAD-responsive.
- Climate-Proofing and disaster resiliency should be rationalized in infrastructure policy, planning and programming.
- Idle land taxes shall be levied to compel landowners to utilize their vacant lands or accelerate development plans in order to avoid payment of unnecessary taxes (Section 236, RA 7160, Section 11, RA 8435 or Agriculture and Fisheries Modernization Act (AFMA).
- Residents in hazard-prone areas should be relocated;
- Developments within hazard-prone areas may be allowed provided that mitigating and/or protective measures are adopted to address the potential danger or risk to lives and properties. However, areas declared as no-build zones should never be used for any development that requires building infrastructures.
- Encourage and strengthen LGU and private partnership in the provision of resilient and affordable housing;
- Basic amenities for the development of resettlement sites must be included;
- Strict implementation of the National Building Code and integration of green architecture for new buildings shall be observed;
- Construction of evacuation centers shall be given priority;
- Regulate conversion of agricultural areas to urban uses;
- Intensify campaign for utilization of Sloping Agricultural Land Technology (SALT) in upland areas;
- Introduce climate change resilient crops and cropping pattern;
- Link agricultural areas to markets through developed and well maintained support facilities;
- Organic agriculture shall be promoted to protect and maintain ecological balance;
- No industrial establishment shall be allowed without anti-pollution plan and buffer zones plan;
- Extraction activities shall not start unless properly supported by environmental impact studies and endorsed by the barangay and municipal government;
- Beautification, greening of street shoulders and planting of trees along national highway, residential, commercial and industrial establishments should be encouraged;
- Regulate the construction of structures within the 30 meters' right-of-way for national road, 20 meters for provincial road and 15 meters for municipal roads;
- Implement infrastructure support in the form of "riprapping" or the construction of protection for creeks, rivers, and shore walls to prevent soil erosion;
- Intensify and enhance solid waste and wastewater management programs;
- Pursue the establishment of more open spaces for parks and recreations;
- Regulate installation of telecommunication facilities with adverse effects on the health and safety of the community;
- Install fire hydrants in strategic places;
- Install accessible road/dry standpipe with standby fire pump in areas considered as fire-prone; and
- Encourage the use of renewable energy in building new infrastructures and facilities.

Water Use Policies

The municipal government shall have jurisdiction over the municipal waters. It shall be responsible for the management, conservation, development, protection, utilization and disposition of all coastal and fishery resources within the municipal waters. The municipal government, in consultation with the MFARMC and other concerned agencies and institutions, shall enact corresponding ordinances and issue executive orders thereon provided-that all ordinances enacted and executive orders issued by the municipal government shall conform with the existing national and local laws and policies and shall not endanger the sustainability of the coastal and fishery resources or destroy the ecological balance.

- Protect the rights of the registered municipal fisherfolks in the preferential use of communal marine and fishery resources, both inland and offshore;
- Implement limited access to fisheries and aquatic resources within the Gubat Managed Access Areas exclusively for the use and enjoyment of registered and licensed fisherfolk of Gubat for limited fishing activities;
- Utilize municipal waters for fisheries and coastal related activities, subject to existing laws and regulations;
- Allow other activities, such as but not limited to, research and monitoring activities under appropriate regulations, for purely research, scientific, technological and educational purposes. No commercial fishing vessel is allowed to operate within the municipal waters;
- Allow municipal fisherfolk from other municipalities or cities to use the portion of the municipal waters that is beyond the first four kilometers provided that (1) they should be registered municipal/city fishers in their respective municipalities/cities; (2) they should have secured the necessary fishery license from the municipal government of Gubat;(3) their home municipalities/cities also allow Gubatnon fisherfolks to fish in their waters; and (4) shall abide by all ordinances and executive orders pertaining to the use and management of the municipal waters and its coastal resources;
- Approve applications for registration of fisherfolk and license to fish, strict regulation based on the number, size or length of the fishing gears per fisherfolk, taking into consideration the maximum sustainable yield (MSY) and carrying capacity of the Managed Access Areas under existing environmental conditions. It shall be planned and monitored through the mechanism to be established and duly approved by the Gubat Managed Access Areas + Sanctuary (GMAAS) Management Board;
- Implement strictly the water code regarding easements along waterways: three meters for urban uses, 20 meters for agricultural use and 40 meters for forest use;
- Regulate/Prohibit construction of any structure on the shore, rivers, irrigation canals and other bodies of water that may obstruct navigation, flow of water or may discharge hazardous chemicals and other forms of pollutants; Households located near the bodies of water must be prohibited from disposing their wastes directly into the water;
- Households located near the bodies of water must be prohibited from disposing their wastes directly into the water;
- Rehabilitate aquamarine ecosystems;
- Protect and conserve existing mangroves and beach forests;
- Ensure water security through continued rehabilitation of watershed areas;
- Implement marine endemic species protection program;
- Strict implementation of RA 9275 or the Clean Water Act to improve the quality of water bodies;

- Intensify mangrove rehabilitation activities to serve as nursery ground for fish and other aquatic species;
- Implement DAO 01, S. 2004 for the demarcation/delineation of municipal waters and come up with strategies to include offshore areas;
- Declare mangrove forests as reserved and protected areas. The cutting of mangroves or conversion of mangrove areas into fishponds and other uses shall be strictly prohibited in accordance with Republic Act 8550 or the Philippine Fisheries Code of 1998;
- Promote conservation and ensure sustainable and equitable utilization of coastal areas and resources;
- Allow people's full and active participation in the sustainable development, conservation, utilization and management of the coastal and aquatic resources through the organization of Barangay/Municipal FARMC and promote awareness of sustainable fisheries through education/training, technology and research, production, financial and marketing assistance;
- Recognize the importance of coastal and marine resources as clean development mechanisms as well as climate change proofing mechanisms to cope with disaster risks;
- Prohibit encroachment of commercial fishing vessels in the municipal waters;
- Protect rare, threatened, and endangered species; and
- Use of foreshore land shall be subject to existing national policies and local ordinances.

I. Future Major Trends in Land Use

Land Use Trends

The existing form of the municipality is that of multi-nodal urban form. This spatial development apparently evolved as an adaptation to the local topography and due to the main economic activity, which is rice and coconut farming. The multi-node form is characterized by clusters of development with a major center that provides specialized facilities and services to its node and acts as its external linkage to other centers of the municipality. Under this urban form, additional growth areas will be developed outside the *poblacion* area. Gubat's major center is located in the eastern portion, halfway between the northern and southern extremes of the municipality and development nodes are mostly right next to the town center. To the north and connected by a major road are the growth nodes of Beriran, Cogon, Sta. Ana, and San Ignacio where major residential areas and relocation sites are located. To the south is the growth node of Ariman and Buenavista, which is also connected by a major road and has a significant number of tourism facilities.

Still, the predominant land use in the municipality shall remain agricultural with 79.40 percent or 9,119.71 hectares of land to be devoted for agricultural use. Areas for urban use or built-up areas shall comprise only 11 percent or 1186.72 hectares. Changes from the existing to the proposed land use are detailed as follows:

a) **Reclassification of agricultural lands.** Only 7.74 percent of the existing agricultural lands shall be reclassified to other land uses. Of the total 764.62 hectares to be re-classified, no irrigated rice land was included.

   (1) Provision of expansion area for natural urban growth shall entail re-classification of non-irrigated rice lands to commercial and institutional uses in San Ignacio, Beriran, Ariman, Beriran, Sta. Ana, Manook.
   (2) Existing rice mills within *poblacion* that are deemed non-conforming to land use shall be relocated in agricultural production areas.
   (3) An additional 2.6458 hectares of rice lands shall be re-classified for the institutional use for the proposed government center in Ariman and Panganiban.

b) **Expansion of built-up areas.** From the existing 737.67 hectares of built-up area (residential, commercial, socialized housing, tourism, institutional, industrial, agri-industrial, parks and recreations, cemeteries) is the provision of 68.06 percent increase in urban land uses for the next 10 years to 1,239.74 hectares

   (1) In pursuit of tourism development, land allocation for tourism use has increased from existing 23.78 hectare to 48.38 hectares mostly in Ariman, Buenavista, Cogon, and Rizal.
   (2) Allocation for residential lands is increased by 49.96 percent from the existing 565.68 hectares to 848.30 hectares. With this allocation, residential lands are enough for the 2029 projected household which is 15,735 households with an average lot size of 100 square meters per household.
   (3) Lands for socialized housing are 60.04 hectares. From the existing housing backlog of 1,156 from displaced, unacceptable, and makeshift housing units, the land allocation for socialized housing is 100 square meters per unit.

(4) For the development strategy of being a trading and commercial hub, commercial area is increased from 22.5 hectares to 109.37 hectares for the next 10 years. Commercial lands will compose 8.82 percent of the total built-up area from the existing 3.05 percent.
(5) Land allocation for agri-industrial uses is 17.55 hectares to accommodate the transfer of non-conforming land use of agri-processing facilities (i.e., multi-pass rice mills) from residential/commercial areas to appropriate sites.
(6) Institutional area is increased to 103.26 from existing 78.37 hectares, with provision of institutional lands for the proposed government center in Ariman and Panganiban.
(7) Land allocation for parks and recreation is 37.58 hectares, which will provide 5,610 square meters of park and recreational lands per 1,000 populations by 2029.
(8) An additional 4.15 hectares of burial grounds is allocated, which is adequate for the next 10 years with provision for ample burial ground open spaces.
(9) For road openings to connect settlements to production lands, commercial areas, and other urban uses, a total of 120.79 hectares is allocated.
(10) A total of 5.25 hectares for solid waste sanitary landfill is allocated in Tagaytay. This facility can accommodate solid waste generated by the whole municipality for the next 10 years.
(11) An industrial area will be established with a total area of 14.90 hectares in Cabiguhan.
(12) Areas for quarrying will be 2.80 hectares.

c) **Regeneration of the environment.** Currently, the only forest cover in Gubat is the mangrove area situated along the coast of Panganiban, Pinontingan, Bagacay, Paco, Tiris, Cogon, and Rizal. Mangrove planting activities have been conducted recently on the nipa palm areas identified in Ariman.

(1) To provide mitigating measures, and to serve as a buffer, 25,582 square meters of mangrove will be planted along the corridor of the coastal road in Pinontingan.
(2) A 15.92-hectare man-made forest will be grown along select watershed areas in Gubat. This shall provide additional protection to identified water sources in Bentuco, Bulacao, Manapao, Nazareno, Ogao, Sangat, and Villareal.

The following table is a tabulation and quantity of proposed land and water uses within the jurisdiction of the municipality. A comparison is made with existing land uses, the proposed land uses, and the corresponding increase/decrease:

Table 21. Land and Water Use: Existing vs Proposed.

Land Use Category	Sub Categories	Area in Hectares (Existing)	Area in Hectares (Proposed)	Change +- %
Land				
Agriculture		9884.33	**9119.71**	-764.62 has (7.73%)
	Agri-Industrial	2.13	**17.55**	+15.42 has (723.94%)
Forest Reserve		0	**15.92**	+15.92 has (1592 %)
Tourism		23.78	**48.38**	+24.6 has (103.44%)
	Heritage Overlay Zone	0	**14.7**	+14.7 has (1470%)
Settlement	Residential	565.68	**848.30**	+282.62 has (49.96%)
	Socialized Housing	23.3	**60.04**	+36.74 has (157.68%)
Commercial		22.55	**109.3**	+86.75 has (384.70%)
Industrial		6.85	**14.90**	+8.05 has (117.51%)
Institutional		78.37	**103.26**	+24.89 has (31.75%)
	Government Center	0.73	5.86	+5.13has (702.73%)
	Child Development Centers	0.21	1.14	+.93 has (442.86%)
	Schools	67.85	66.53	-1.32 has (1.94%)
	Barangay Health Centers	2.10	1.04	-1.06 has (-50.48%)
	District Hospital	1.09	2.72	+1.63 has (149.54%)
	Birthing Home	0	0.15	+0.15has (15%)
	Evacuation centers	0.12	8.59	+8.47 has (7,058.33%)
	Churches	8.34	13.41	+5.07has (60.79%)
	Multipurpose Hall	0.97	3.82	+2.85 has (293.81%)
Parks and Recreational		3.08	**37.58**	+34.50 has (795.45%)

Cemetery / Memorial Park		12.06	**16.21**	+4.15 has (34.41%)
Utilities		3.55	**16.00**	+12.45 has (350.70%)
	Transport terminal	0.49	8.48	+7.99 has (1630.61%)
	Telco Towers	0.31	0.35	+0.04 has (12.90%)
	Dumpsite / Sanitary Landfill	1.79	5.85	+4.06 has (226.81%)
	Gubat Water District Office/Water sources	0.35	0.25	-.10 has (28.57%)
	SORECO II Gubat Branch/Substations	0.57	1.57	+1.00 has (175.44%)
	Ports/ Pier	.048	0.48	0
Mineral	Quarry Sub-Zone	0	2.80	+2.80 (280%)
Water				
Fishery Refuge and Sanctuary Sub-zone		31.70	47.76	+16.06 has (44.65%)
Protected Zone		0	141.49	+141.49 has (14,149%)
Foreshore Land Sub-Zone		17.96	6.00	-11.96 has (66.59%)
Mangrove Forest		401.82	551.49	+149.67 has (37.24%)
Aquaculture Sub-Zones		440.16	223.64	-216.52 has (49.19%)
Mariculture Zone and Park Sub-Zones		0	112.83	112.83 has (11,283%)
Stationary Sub-Zone		1,340.62	1,130.88	- 209.74 has (15.65%)
Municipal Fishing Sub Zones		17,221.95	17,298.55	76.60 has (0.44%)
Sealane Sub-Zones		249.14	252.47	3.33 has (1.34%)
Docking Sub-Zones		23.33	24.25	0.92 has (3.94%)
Tourism Sub-Zone		113.27	113.27	0

Table 22. Converted Land Areas.

Existing Land Use	Proposed Land Use	Converted Area in Hectares
Agriculture	Agri-Industrial	14.2504
	Commercial	65.51679
	Forest Reserve	15.9249
	Industrial	14.493
	Institutional	20.59664
	Mangrove	150.985635
	Parks and Recreation	29.7001
	Residential	333.1909
	Socialized Housing	35.8102
	Tourism	14.712
	Utilities and Transportation	8.41717
	Foreshore land	0.2074
	Quarry	2.8038
	Roads	58.356397
Cemetery / Memorial Park	Tourism	0.7172
Commercial	Institutional	0.1562
	Parks and Recreation	0.21747
	Tourism	0.1142
	Utilities and Transportation	0.3144
Foreshore Land	Parks and Recreation	3.3469
	Residential	2.3815
	Tourism	5.12
Institutional	Commercial	0.6611
	Parks and Recreation	1.15483
	Residential	0.246
	Roads	0.0343
	Tourism	0.1502
	Utilities & Transportation	1.0122
Mangrove	Tourism	5.4576
Parks and Recreation	Residential	0.255
Institutional	Agri-Industrial	0.558
	Aquaculture	2.2731
	Commercial	19.90994
	Institutional	8.11063
	Mangrove	0.3846
	Parks and Recreation	3.4994
	Socialized Housing	1.148
	Tourism	5.7078
	Cemetery	5.0356
	Utilities & Transportation	0.6007

J. Proposed Major Spatial Programs and Projects

The key strategic programs and projects are directly linked to the provision or delivery of the necessary outputs to achieve the CLUP outcome indicators. The major implementation mechanism of this CLUP is through the Zoning Ordinance and the Comprehensive Development Plan and Local Development Investment Program. The CDP and investment programs will be updated to include these programs and projects. Arising from the structure/concept plan, the detailed land use plan and identified policies are the following spatial programs and projects:

Economic Sector

Agricultural Crops

1. Construction of adequate farm-to-market roads and maintenance of the existing ones
2. Improvement of existing irrigation facilities and construction of small-scale irrigation systems
3. Construction of post-harvest facilities and support farm facilities (irrigation canals, mechanical dryers, etc.)
4. Rehabilitation/Improvement of pre- and post-harvest facilities
5. Construction/Installation of techno-demo farm facilities
6. Construction of *bagsakan* center
7. Institutionalization of modernized farm production practices for more utilization of farm resources
8. Construction/Installation of Shallow Tube Wells
9. Operation and Maintenance of Agri-Forestry Nursery
10. Rehabilitation of abaca plantations
11. Development of diversified agricultural crops, i.e., intercropping or cacao, turmeric, pineapple, etc.
12. Establishment of agricultural research and development facility
13. Coconut replanting and diversified based farming system, i.e., intercropping
14. Support to farm tourism – establishment of farm cottages;
15. Establishment of protective vegetable production
16. Establishment of processing facilities
17. Establishment of organic production facilities
18. Establishment of a training, research and development for agriculture clientele (farmers/fisherfolk/youth and women in agriculture, others)
19. Establishment of farm machineries and equipment sheds
20. Establishment of Sloping Agricultural Land Technology demonstrations
21. Construction of Agriculture Office Extension at the soon-to-be-vacated slaughterhouse including additional office space, warehouse, and demo farm

Livestock, Poultry, and Other Animals

1. Construction of new slaughterhouse
2. Establishment of municipal dairy farm/ dairy box and processing facility
3. Establishment/Construction of a livestock auction market
4. Expansion of municipal carabao multiplier farm
5. Establishment/Maintenance of pasture areas/feedlots and feed production projects for bovine/swine and poultry
6. Establishment of Municipal Dog Pound
7. Maintenance and expansion of pasture areas

Fisheries

1. Construction/Rehabilitation of fish landing facilities
2. Prohibition of illegal fishing practices as specified in municipal fisheries ordinance
3. Expansion of municipal tilapia hatchery
4. Establishment of processing facilities for fishery products including seaweeds and danggit
5. Establishment and maintenance of mariculture and aquasilviculture projects and seaweeds farms

Eco-tourism Development

1. Provision of support to surf camps in Barangay Buenavista
2. Declaration of Gubat Bay Development as a Tourism Protected Area (TPA)
3. Improvement/Development of mangrove ecosystem
4. Rehabilitation of possible dive sites
5. Establishment/Construction of Tourism Office
6. Installation/Construction solar lighting in identified tourist destination and/or areas
7. Construction of more sustainable tourism facilities, accommodation, and amenities
8. Improvement of marine sanctuaries, marine protected areas, diving sites
9. Improvement of site for heritage walk experience an the improvement of the Gubat Heritage Center
10. Development of tourism product development centers i.e., *salanigo* weaving centers, pottery centers
11. Establishment of additional sustainable farm tourism facilities – i.e. crab sanctuary, techno-demo farms

Trade/ Industry

1. Improvement of the public market i.e., vertical development
2. Establishment of new commercial growth nodes and corridors
3. Establishment of satellite markets in identified growth nodes/centers
4. Establishment of new *saudan* (market day area and trading/ buying center)
5. Construction/Opening of local access roads
6. Construction of production facilities for emerging industries and agriculture enterprises
7. Establishment/ construction of integrated transport terminal
8. Development of agri-entrepreneurial support facilities for carabao milk production, pottery, and danggit

Social Development

Social Welfare

1. Construction of new Municipal Social Welfare and Development Office with stock room for relief goods and counseling room that will also serve as “pink center”– to cater to victims of Violence Against Women and Children (VAWC) and child abuse
2. Construction of temporary shelter/halfway home for victims of VAWC, children at risk, children in conflict with the law, stranded individuals, and other clients needing temporary refuge/care

3. Construction of halfway house for mentally-ill patients
4. Construction/Improvement of 30 standard-sized child development centers
5. Construction of training centers
6. Improvement of senior citizen center
7. Construction of Persons with Disabilities Affairs Office

Health and Nutrition

1. Establishment of lying-in clinics through clustering nearby and/or adjacent barangays
2. Establishment of Botika Sa Barangay that offers lower price medicines
3. Construction of sanitary toilets –to improve sanitation and prevent the spread of communicable diseases
4. Installation/Procurement of water treatment facility and other needed equipment for the facility
5. Construction of wastewater treatment facilities where needed i.e. slaughterhouse, drainages leading to the sea/river, hospital, funeral parlors
6. Construction of new barangay health stations (BHS) and/or rehabilitation of the existing BHSs
7. Promotion and establishment of school, community and residential backyard vegetable gardening
8. Construction of level 3 LGU-run water systems
9. Expansion of Salvador R. Encinas District Hospital into a 128-bed capacity hospital
10. Construction of a new 10-bed capacity birthing home
11. Construction of recreational facilities to promote healthy lifestyle
12. Construction of a 10-bed capacity mental health facility
13. Construction of a new septic vault for infectious and hazardous wastes
14. Development of new Civil Cemetery (Interfaith)

Education

1. Establishment of vocational and/or technical training schools
2. Construction of public tech-vocational training center or multipurpose hall per school district that will target OSY, college dropouts and underprivileged students
3. Improvement of public library for reading recovery and read along programs
4. Improvement of government establishments, i.e., by putting up separate comfort rooms for male, female and LGBT in public schools, public market, terminals and other government buildings
5. Construction of senior high school classrooms and other school amenities
6. Construction of more climate-change-adaptive school buildings
7. Establishment of Bagacay Elementary Annex School
8. Establishment of LGU-run school dormitories
9. Establishment of Payawin High School
10. Construction of standard kindergarten classrooms in 42 barangays
11. Construction of clustered libraries
12. Improvement of Bicol University Buenavista into an economic zone (PEZA)

Housing and urban settlement

1. Land banking for future housing needs
2. Land development
3. Construction of more affordable housing for Informal Settler Families (ISFs), the underprivileged families, and those families located within the hazard-prone areas
4. Development of resettlement areas

Sports, Recreation, Arts and Culture

1. Construction of additional sports facilities
2. Development of amusement centers, recreational centers, and cultural center
3. Improvement of existing sports and recreation facilities in urban and rural barangays
4. Provision of parks and playgrounds in every center of clustered barangays
5. Development of the municipal sports complex
6. Rehabilitation and expansion of municipal mark
7. Relocation of cockpit arena
8. Restoration or repurposing of Monreal Ruins, Presidencia, Union Obrero, and other cultural heritage sites

Public Safety and Order

1. Establishment of community rehabilitation centers
2. Construction of new municipal police station and substations in new growth centers
3. Construction of substations/outposts for *barangay tanods* and traffic aides
4. Land banking for National Government Agencies (MCTC, RTC, BJMP, BFP)
5. Construction of permanent building for Gubat Emergency Response Team Operation Center
6. Relocation of BJMP

Infrastructure Sector

Transportation

1. Construction of multi-storey public market building utilizing ground floor as parking area/terminal
2. Construction of integrated transport terminal for buses, jeepneys, vans, and delivery trucks
3. Relocation or requirement of standards for private terminals and vehicle repair shops; road-clearing of Quezon Street., and all municipal roads
4. Construction of diversion road and additional access roads
5. Construction of shoulder and sidewalks along municipal and barangay roads
6. Enforcement of regulations on road right-of-way (RROW) and easement
7. Provision of accessibility for PWD in accordance with Accessibility Law
8. Improvement of tricycle parking areas in the commercial and business districts
9. Installation of appropriate traffic signs, notices and billboards, and creation of traffic management unit

Power

1. Installation of renewable energy stations to sustain the increasing demand for electricity
2. Replacement of damaged posts with climate-resistant materials
3. Repair and maintenance of power lines
4. Installation of additional transformer and power lines in proposed expansion of urban and commercial areas
5. Installation/Construction of solar lights in all barangays
6. Intensification of electrification program in rural areas

Water

1. Development of new water sources
2. Improvement of supply lines and systems

Information and Communication Technology

1. Construction of more telecommunications towers to expand coverage in rural areas
2. Upgrade telecommunication facilities
3. Development of LGU local website

Solid Waste Management

1. Establishment of sanitary landfill equipped with machine and work tools
2. Establishment of MRF in all barangays, with technology and equipage
3. Compliance to RA 9003 or the Ecological Solid Waste Management Act of 2000
4. Construction of Residual Containment Area

Environment/Climate and Disaster Risk Adaptation and Mitigations

1. Construction of more climate-change-adaptive evacuation centers in strategic locations and clusters
2. Installation of more wastewater treatment facilities from commercial, hospitals, resorts, and fishponds near bodies of water
3. Riprapping of roadside with slope area
4. Construction of road protection
5. Construction of river protection
6. Rehabilitation of sanitary landfill
7. Institutionalization of early warning system and incident command system in every barangay
8. Establishment of climatology/weather monitoring system in barangays
9. Establishment of nursery for watershed reforestation/mangrove propagules
10. Implementation of reforestation (watershed, mangrove, beaches) and/or wide mangrove plantation on coastal areas