

# **LAND SUITABILITY MAP**

## **CACAO**

### **LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS**

### **PROVINCE OF AGUSAN DEL SUR**



**REPUBLIC OF THE PHILIPPINES**  
**DEPARTMENT OF AGRICULTURE**  
**BUREAU OF SOILS AND WATER MANAGEMENT**

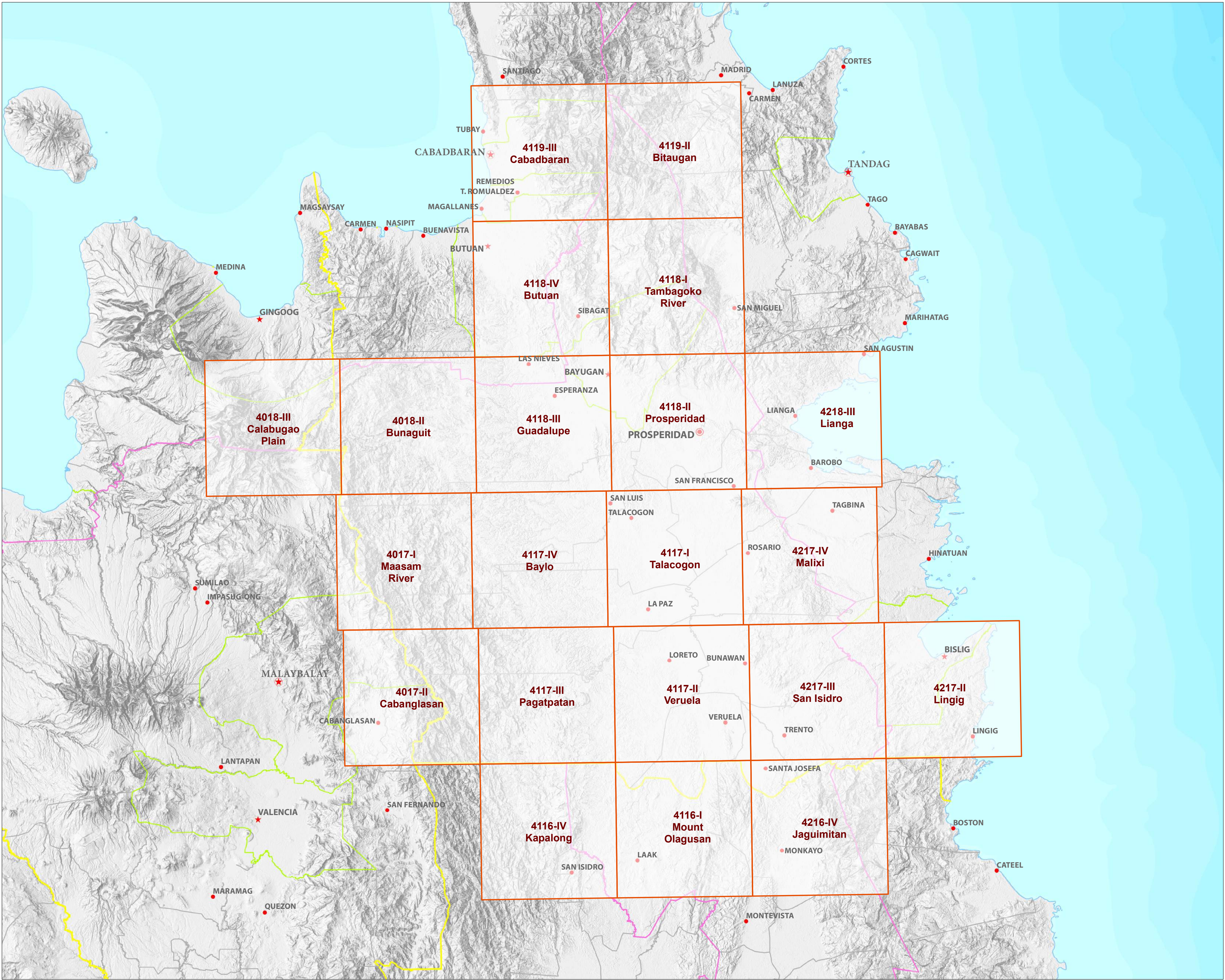
SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101  
Tel/Fax No.: (+632) 332-9534 E-mail: [bswmclientcenter@yahoo.com](mailto:bswmclientcenter@yahoo.com)



# MAP INDEX

## LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

### PROVINCE OF AGUSAN DEL SUR



#### LEGEND

##### Places

- ★ Capital City
- ★ City
- Capital Town
- Town

##### Administrative Boundary

- Regional
- Provincial
- City
- Municipal

##### Map Index

- Index grid

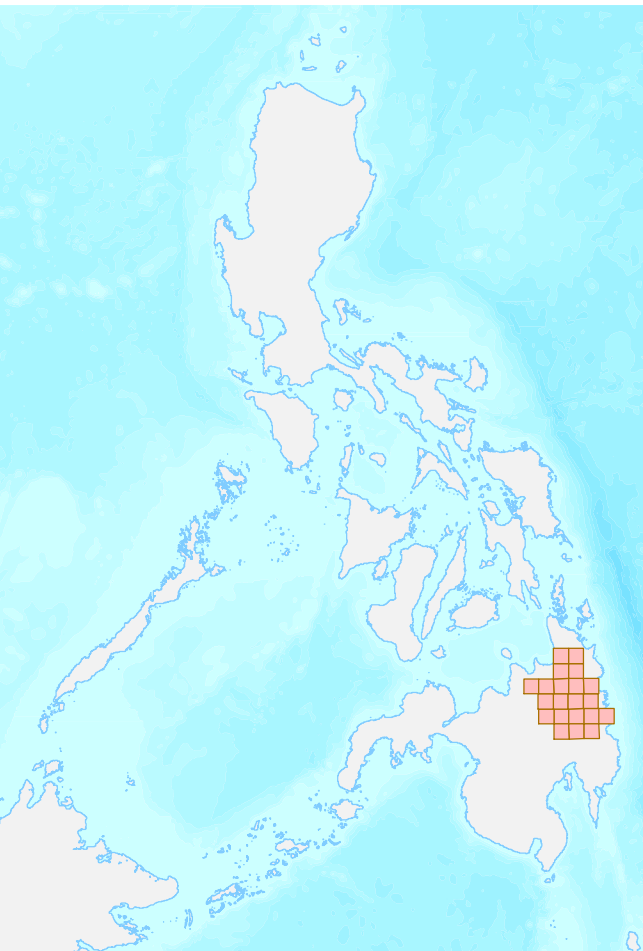
##### Topographic Relief



##### Bathymetry



#### LOCATION MAP



#### MISCELLANEOUS INFORMATION

Land suitability information produced by the Bureau of Soils and Water Management (BSWM) through the Land Resources Evaluation and Suitability Assessment of Strategic Production Areas for Major Commodities Project duly supported by the Philippine Council on Agriculture and Fisheries (PCAF) and funded by the Bureau of Agricultural Research (BAR).

Map produced by the Geomatics and Soil Information Technology Division, Bureau of Soils and Water Management (BSWM).

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DEPARTMENT OF AGRICULTURE  
BUREAU OF SOILS AND WATER MANAGEMENT  
SRDC Bldg., Elliptical Road Cor. Visayas Avenue,  
Diliman, Quezon City 1101 Philippines  
Tel/Fax No.: (+632) 332-9534 E-mail: bswwmclientcenter@yahoo.com



# LAND SUITABILITY MAP FOR CACAO

## LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS AGUSAN DEL SUR, REGION XIII

### EXTENT OF SUITABILITY FOR CACAO PRODUCTION BY MUNICIPALITY

MUNICIPALITY	EXISTING CACAO (Ha)			TOTAL EXISTING AREA (Ha)	EXPANSION AREA (Ha)						CONFLICT RESOLUTION AREA (Ha)						TOTAL POTENTIAL EXPANSION AREA (Ha)
					Coconut		Shrubland, unmanaged*		Grassland, unmanaged*		Oil Palm		Corn		Other crops		
	S1	S2	S3		S1	S2	S1	S2	S1	S2	S1	S2	S1	S2			
BUNAWAN	104	4	-	108	5,953	225	721	-	2,645	89	180	-	-	-	534	34	10,380
CITY OF BAYUGAN	93	79	-	172	2,664	12	1,484	2	5,606	867	-	-	-	-	278	-	10,913
ESPERANZA	336	-	-	336	1,573	428	3,942	112	10,084	63	-	-	-	-	114	11	16,327
LA PAZ	168	10	-	178	-	-	7,113	128	4,096	228	-	-	-	-	102	-	11,667
LORETO	31	-	-	31	484	-	9,478	108	7,747	15	-	-	-	-	179	-	18,012
PROSPERIDAD	3	-	-	3	1,967	252	295	97	10,765	1,500	-	-	-	-	920	6	15,802
ROSARIO	-	-	-	-	3,900	75	1,637	21	2,200	4	1,598	-	-	-	702	-	10,137
SAN FRANCISCO	2	-	-	2	2,784	18	550	248	2,899	413	3,536	-	-	-	831	53	11,333
SAN LUIS	-	-	-	-	1,493	-	15,727	420	8,235	58	-	-	-	-	427	-	26,359
SANTA JOSEFA	-	-	-	-	1,172	7	1,644	12	51	-	2,687	-	-	-	75	-	5,649
SIBAGAT	44	22	-	65	321	-	3,689	419	3,152	1,268	-	-	-	-	66	-	8,914
TALACOGON	29	-	-	29	3,448	-	8,335	3	2,323	8	60	-	-	-	500	2	14,679
TRENTO	1	1	-	2	15,770	294	2,744	-	521	-	467	-	-	-	20	-	19,817
VERUELA	121	1	-	122	4,688	-	10,005	106	198	-	516	-	-	-	107	-	15,620
TOTAL	932	117	-	1,049	46,218	1,311	67,365	1,675	60,523	4,513	9,044	-	-	-	4,854	106	195,609

Note: Delivery of cacao planting materials must be started on the onset of rainy season.  
\*establishment of shade trees prior to planting of cacao.

### SUITABILITY CLASSES:

**Highly Suitable (S1)**  
Land having no significant limitation to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

**Marginally Suitable (S3)**  
Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

**Moderately Suitable (S2)**  
Land having limitation which in aggregate are moderately severe for sustained application of a given use; the limitation will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.

**Not Suitable / Not Relevant**  
Land having limitations which may be surmountable in time but which cannot be corrected with existing knowledge at currently acceptable cost; the limitations are so severe as to preclude successful sustained use of the land in the given manner. Existing forest, shrubland greater than 18% slope, irrigated paddy rice and miscellaneous land types such as built up areas, roads, etc are considered as not relevant.

### AGRONOMIC REQUIREMENT OF CACAO PRODUCTION

LAND UTILIZATION TYPE	SUITABILITY RATING	SLOPE (%)	SOIL DEPTH (cm)	SOIL TEXTURE	SOIL DRAINAGE	SOIL REACTION (pH)	INHERENT FERTILITY	FLOODING CLASS	EROSION CLASS	ROCK OUTCROPS	ELEVATION (masl)	ANNUAL RAINFALL (mm)	CLIMATIC TYPE
Cacao	S1	<8	>100	CL, SICL, SCL, SC, SiC, C, HC	WD,MWD	5.6 -7.2	high	none-slight	none-slight	none-few	<1000	2001-4500	I, III, IV
	S2	8 - 30	50 - 100	FSL, L, SiL	SPD,PD	5.1 - 5.5 7.3 - 7.8	medium	moderate	moderate	common	1000-1500	1000-2000	I, II
	S3	>30	<50	S, LS, CSL, SL	VPD,ED	<5.0 - > 7.9	low	severe	severe	many	>1500	<1000 >4500	

<b>SLOPE (%)</b>		<b>SOIL DRAINAGE</b>		<b>SOIL REACTION (pH)</b>		<b>SOIL TEXTURE</b>			
0 - 3	- level to gently sloping	ED	- excessively drained	< 4.5	- extremely acid	<b>Coarse</b>		<b>Fine</b>	
3 - 8	- gently sloping to undulating	WD	- well drained	4.5 - 5.0	- very strongly acid	S	- sand	SC	- sandy clay
8 - 18	- undulating to rolling	MWD	- moderately well drained	5.1 - 5.5	- strongly acid	LS	- loamy sand	SiC	- silty clay
18 - 30	- rolling to moderately steep	SPD	- somewhat poorly drained	5.6 - 6.0	- medium acid	CSL	- coarse sandy loam	C	- clay
30 - 50	- steep	PD	- poorly drained	6.1 - 6.5	- slightly acid	SL	- sandy loam	HC	- heavy clay
> 50	- very steep	VPD	- very poorly drained	6.6 - 7.2	- neutral	<b>Medium</b>			
				7.3 - 7.8	- mildly alkaline	FSL	- fine sandy loam		
				7.9 - 8.4	- moderately alkaline	L	- loam		
				> 8.5	- strongly alkaline	SiL	- silt loam		
						CL	- clay loam		
						SiCL	- silty clay loam		
						SCL	- sandy clay loam		
<b>SOIL DEPTH (cm)</b>		<b>SURFACE IMPEDIMENT</b>							
0 - 30	- very shallow	ROCK OUTCROPS							
30 - 50	- shallow	< 10%	- none - few						
50 - 100	- moderately deep	10 - 30%	- common						
> 100	- deep to very deep	> 30%	- many						

### LAND LIMITATIONS DESCRIPTION AND COMBINATIONS

<b>ELEVATION</b> EI2 - 1000m - 1500m EI3 - > 1500m	<b>SOIL DRAINAGE</b> D2 - Somewhat poorly drained to poorly drained D3 - Very poorly drained or excessively drained	<b>SOIL DEPTH</b> Sh2 - Moderately deep (50 - 100cm) Sh3 - Very shallow to shallow (< 50cm)	<b>SOIL EROSION</b> E2 - Moderate erosion E3 - Severe erosion
<b>SLOPE/TOPOGRAPHY</b> T2 - Undulating to moderately steep T3 - Steep to very steep	<b>SOIL TEXTURE</b> Tc - Coarse texture	<b>ROCK OUTCROPS</b> Rc2 - Common Rc3 - Many	<b>FLOODING</b> F2 - Moderate seasonal flooding F3 - Severe seasonal flooding

CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION
1	E2-Sh2-Rc2	11	F3-D2	21	T2-EI2-E3	31	T3-E3-Sh2-Rc3	41	T3-EI3-E3-Sh3-Rc2
2	EI2	12	Sh2	22	T2-EI2-E3-Rc2	32	T3-E3-Sh3-Rc2	42	T3
3	EI2-E2-Sh2-Rc3	13	Sh2-Rc2	23	T2-EI2-E3-Rc3	33	T3-E3-Sh3-Rc3	43	T3-E3
4	EI2-E3-Rc3	14	T2	24	T2-EI2-E3-Sh2-Rc2	34	T3-EI2	44	T3-E3-Rc3
5	EI2-E3-Sh2-Rc3	15	T2-E3	25	T2-EI2-E3-Sh2-Rc3	35	T3-EI2-E3	45	T3-E3-Sh3-Rc3
6	EI2-Rc2	16	T2-E3-Rc2	26	T2-EI3-E3-Sh2-Rc2	36	T3-EI2-E3-Rc2	46	T3-EI2
7	EI2-Sh2-Rc2	17	T2-E3-Rc3	27	T2-F2-D2	37	T3-EI2-E3-Sh2-Rc3	47	T3-EI2-E3
8	EI2-Sh2-Rc3	18	T2-E3-Sh2-Rc2	28	T3	38	T3-EI2-E3-Sh3-Rc2	48	T3-EI2-E3-Rc3
9	EI3-Sh2-Rc2	19	T2-E3-Sh2-Rc3	29	T3-E3	39	T3-EI2-E3-Sh3-Rc3	49	T3-EI2-E3-Sh3-Rc3
10	F2-D2	20	T2-EI2	30	T3-E3-Rc2	40	T3-EI3-E3-Rc2	50	T3-EI3-E3-Sh3-Rc3

CODE	LIMITATION	CODE	LIMITATION
4	Corn	119	Oil palm
81	Coffee	126	Grassland
82	Cacao	131	Ipil-ipil
85	Mango	134	Shrubs, unmanaged
91	Banana	137	Rubber
98	Rambutan	139	Falcata
105	Fruit trees, mixed		
107	Abaca		
115	Mixed crops		
116	Coconut		

Source: PAGASA 2018, *Climatological Normals (Rainfall)*, Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), accessed 27 July 2018, <<https://www1.pagasa.dost.gov.ph/index.php/climate/climatological-normals>>.

### CLIMATE TYPE

- TYPE I** : Two pronounced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September
- TYPE II** : No dry season with a very pronounced maximum rain period from December to February. There is not a single dry month. Maximum monthly rainfall occurs during the period from March to May.
- TYPE III** : No very pronounced maximum rain period, with a dry season lasting only from one to three months, either during the period from December to February or from March to May. This type resembles Type I since it has a short dry season.
- TYPE IV** : Rainfall is more or less evenly distributed throughout the year. This type resembles Type II since it has no dry season.

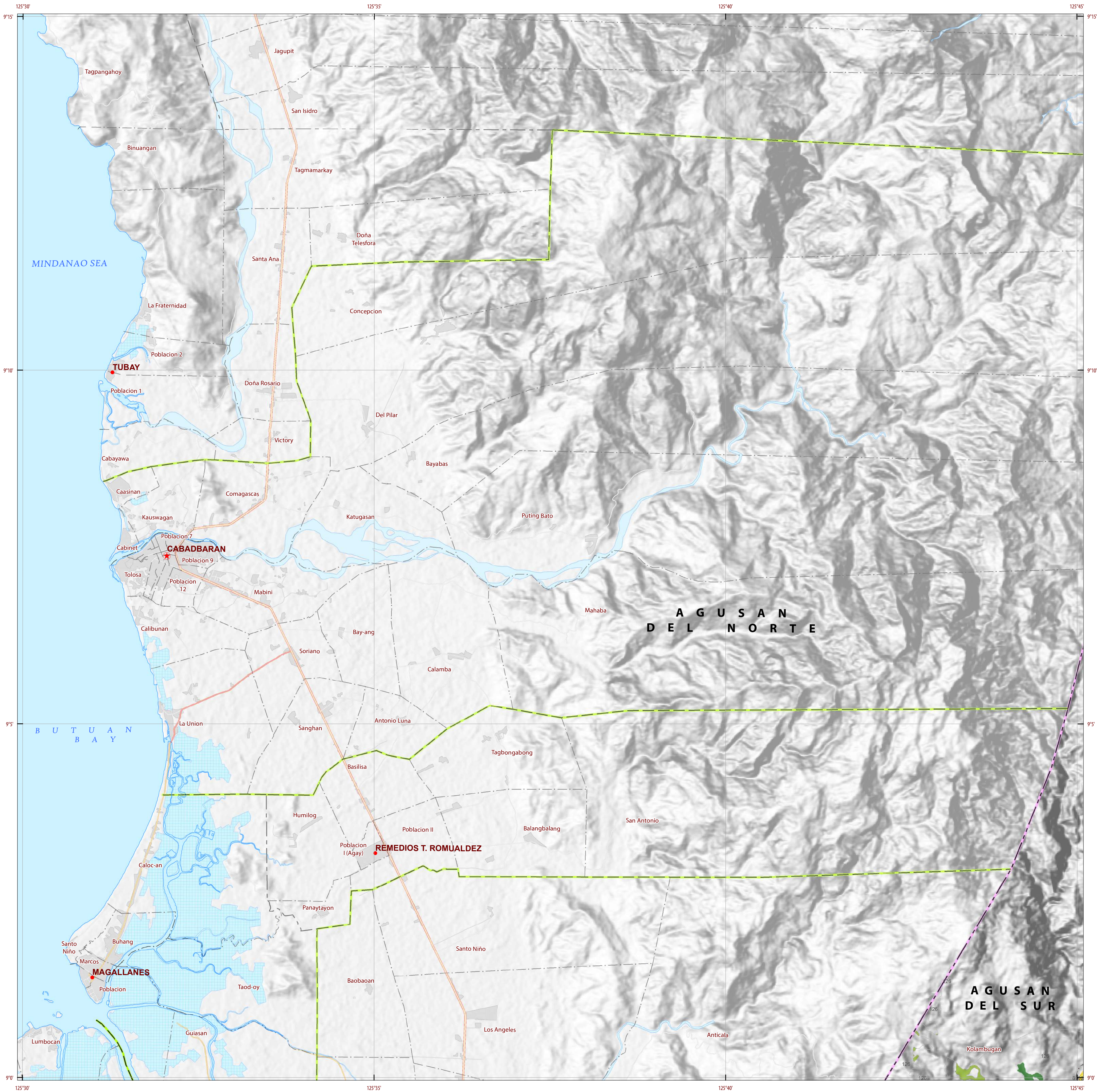
Northeastern part of Agusan Del Sur is classified as climatic Type II while the rest, specifically, the southwestern is climatic Type IV.



4119-III

PROVINCE OF AGUSAN DEL SUR

Cabadbaran



LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

LEGEND

SUITABILITY CLASSES

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Not Suitable/ Not Relevant

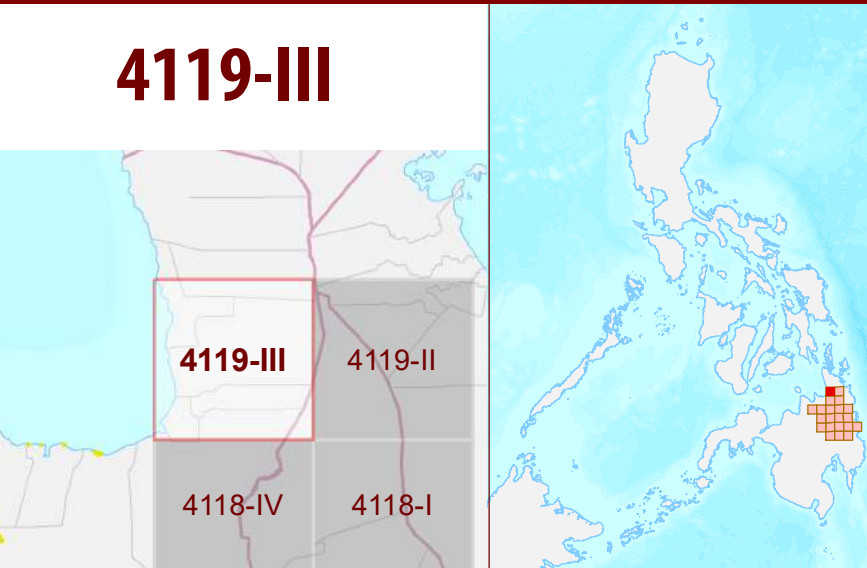
OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

ADJOINING SHEETS



MISCELLANEOUS INFORMATION

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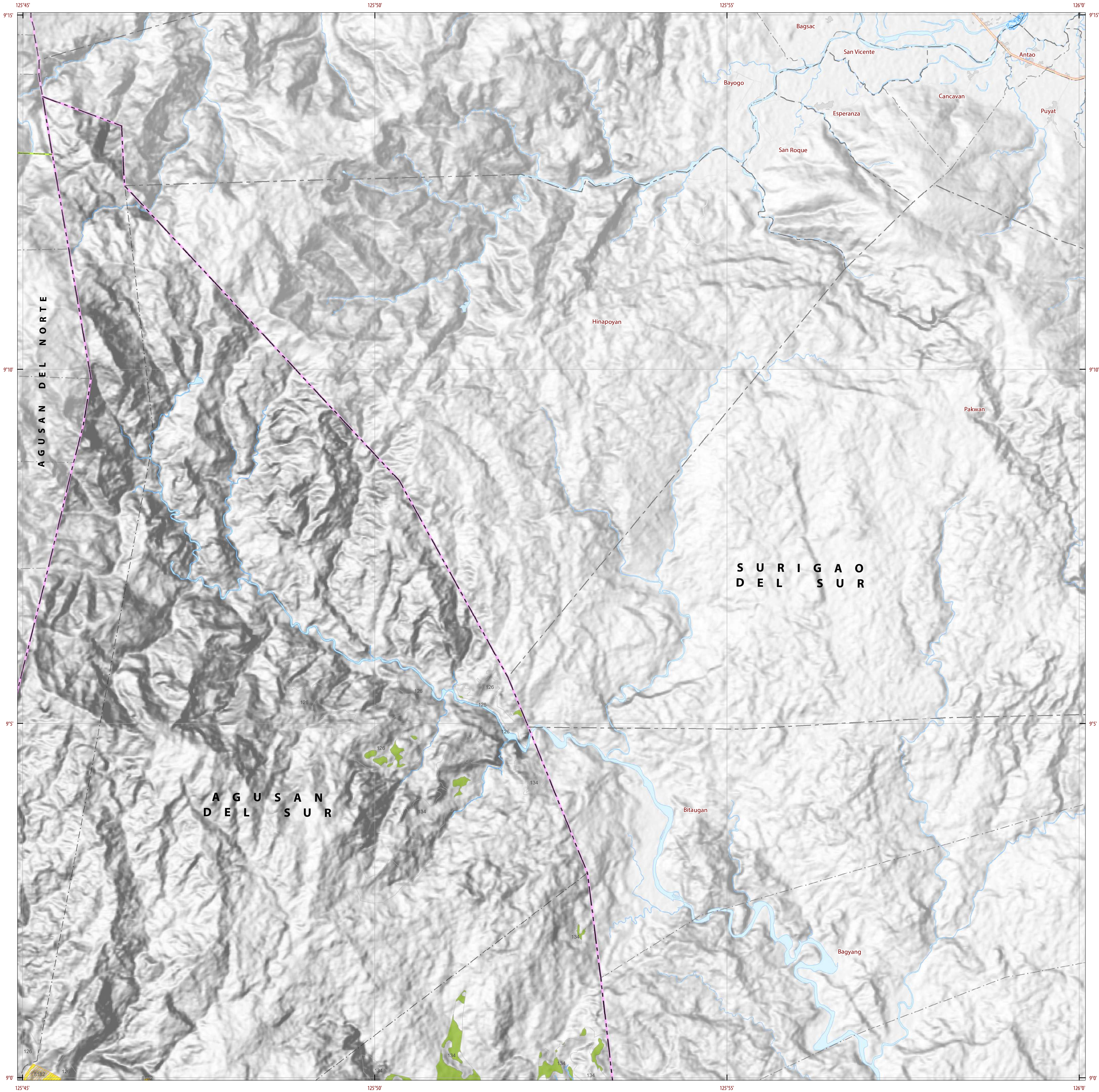
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GIS and Cartography : IRVIN K. SAMALCA  
Funding Agency : Department of Agriculture - Bureau of Agricultural Research (DA-BAR)  
Collaborating Agencies : Philippine Council on Agriculture and Fisheries (PCAF)  
: Department of Agriculture and Fisheries - ARMM, Department of Agriculture Regional Field Office of Region IX, X, XI, XII and XIII (Caraga)  
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### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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#### LEGEND

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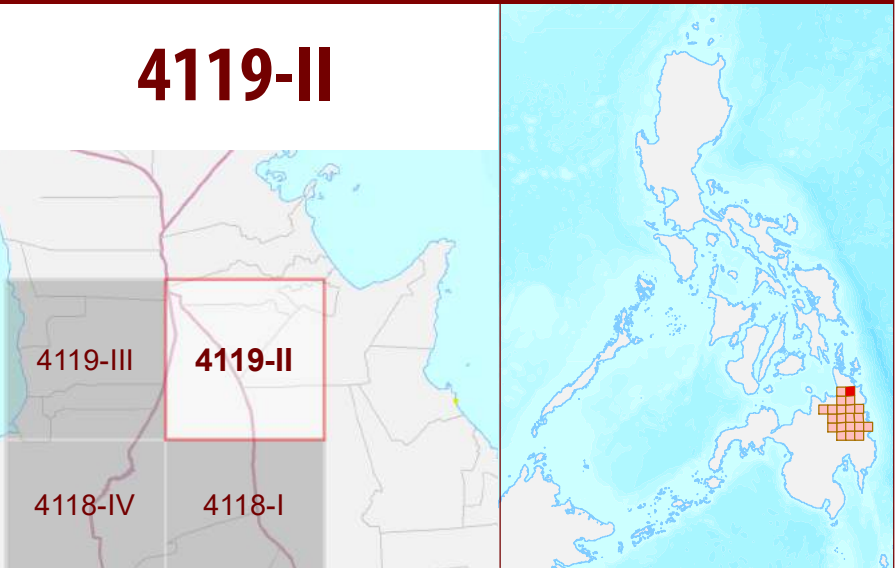
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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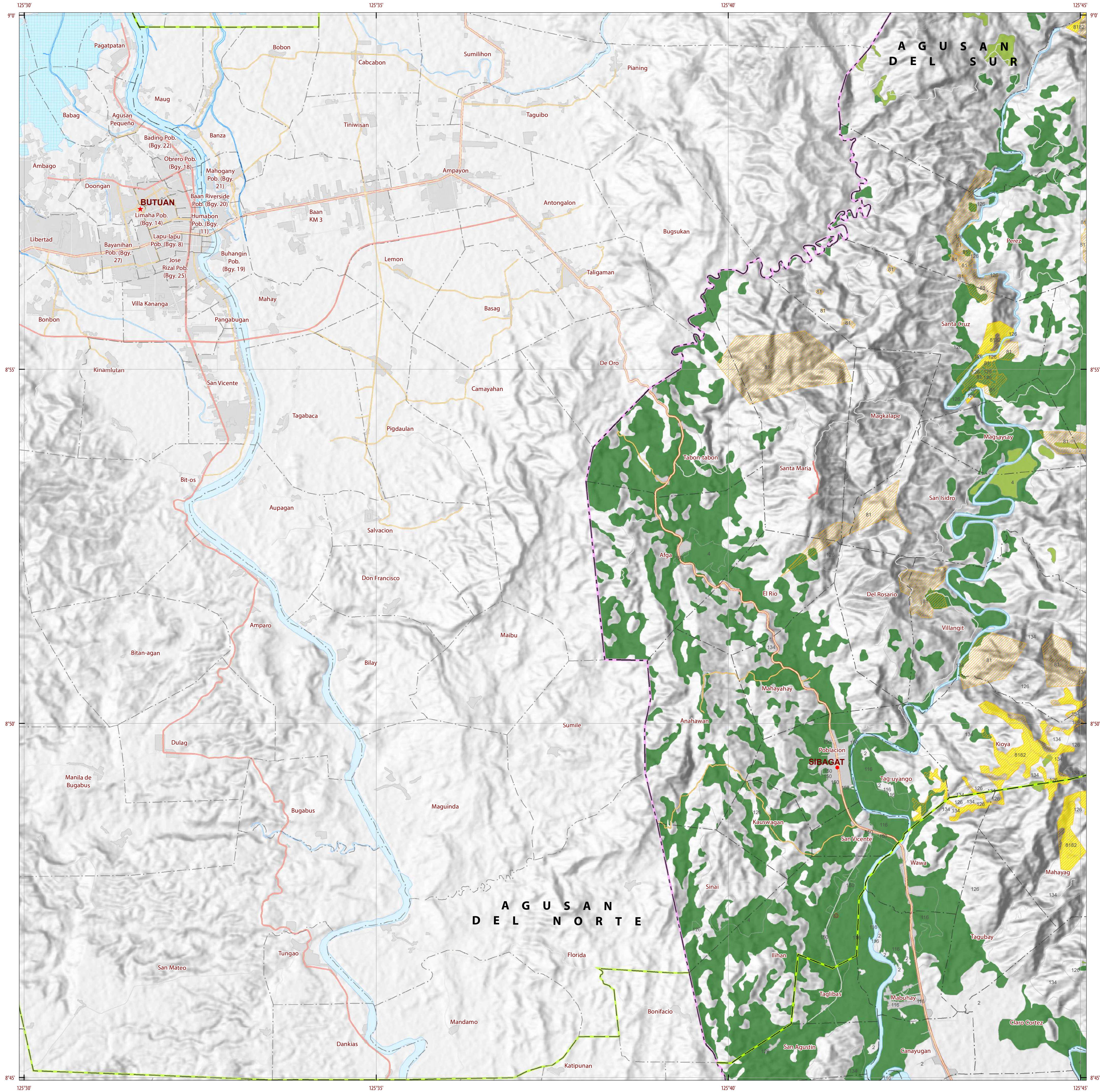
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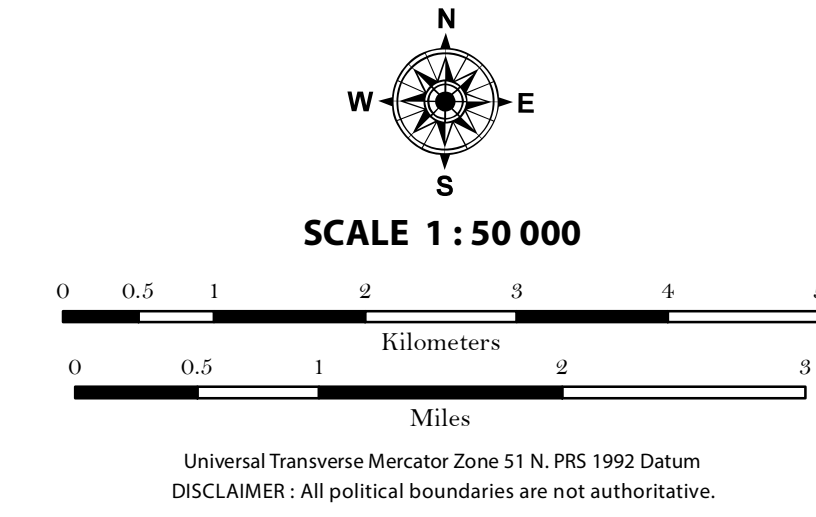
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**LEGEND**

**SUITABILITY CLASSES**

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
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- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

**Not Suitable/ Not Relevant**

**OTHER SIGNS**

- NGP Areas
- Cacao
- Land limitation
- Land use

**CONVENTIONAL SIGNS**

**ROADS**

- Expressway
- Trunk line
- Primary
- Secondary
- Tertiary

**BOUNDARY**

- Region
- Province
- District
- Municipality
- Barangay

**HYDROLOGY**

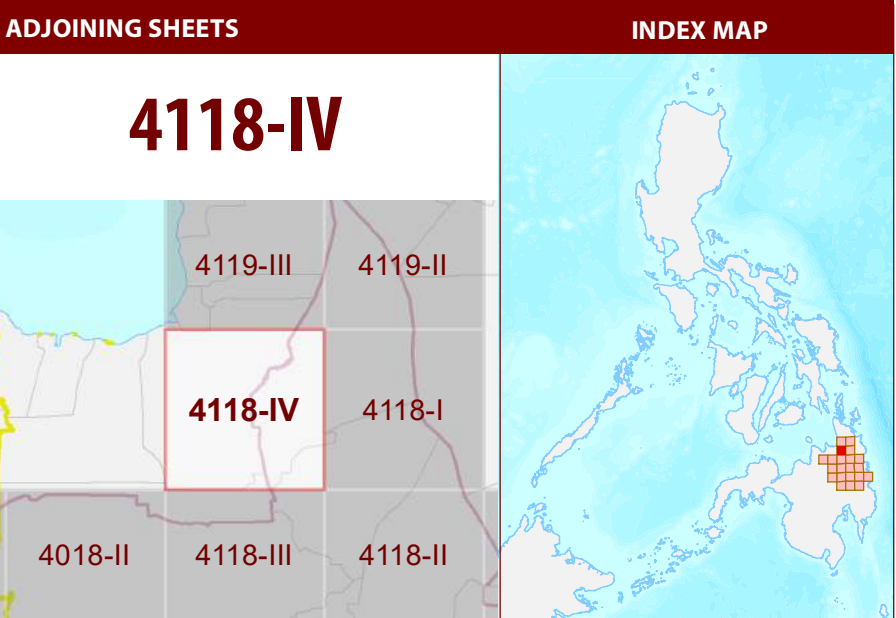
- Sea / Shoreline
- Lakes / Rivers

**PLACES**

- Capital City / City
- Capital Town / Town

**LAND USE**

- Built-up
- Fishpond
- Mangrove



**MISCELLANEOUS INFORMATION**

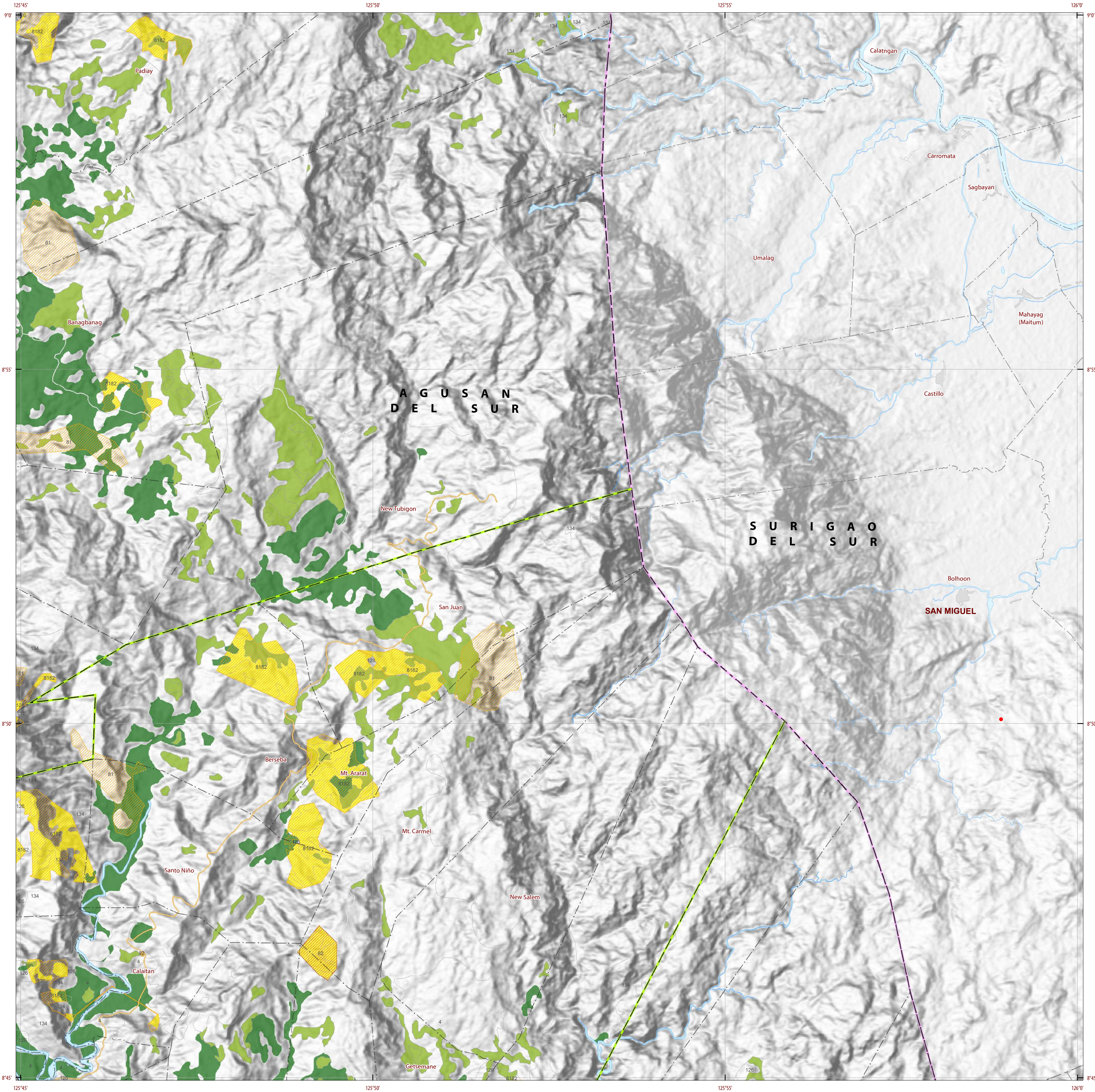
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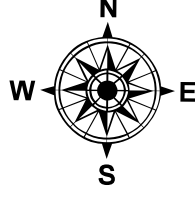





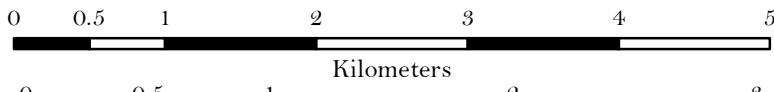


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ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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SUITABILITY CLASSES

S1

Highly Suitable - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2


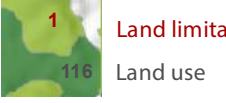


Moderately Suitable - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.

S3

Marginally Suitable - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.


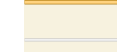
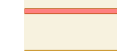
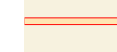
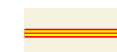
Not Suitable/ Not Relevant

OTHER SIGNS








CONVENTIONAL SIGNS

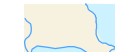

ROADS



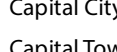

BOUNDARY






HYDROLOGY



PLACES

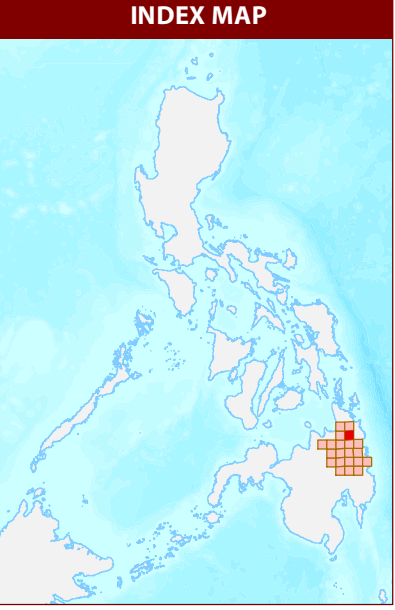


LAND USE



ADJOINING SHEETS

4118-I



MISCELLANEOUS INFORMATION

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Project Leader : BERNARDO B. PASCUA

GIS and Cartography : IRVIN K. SAMALCA

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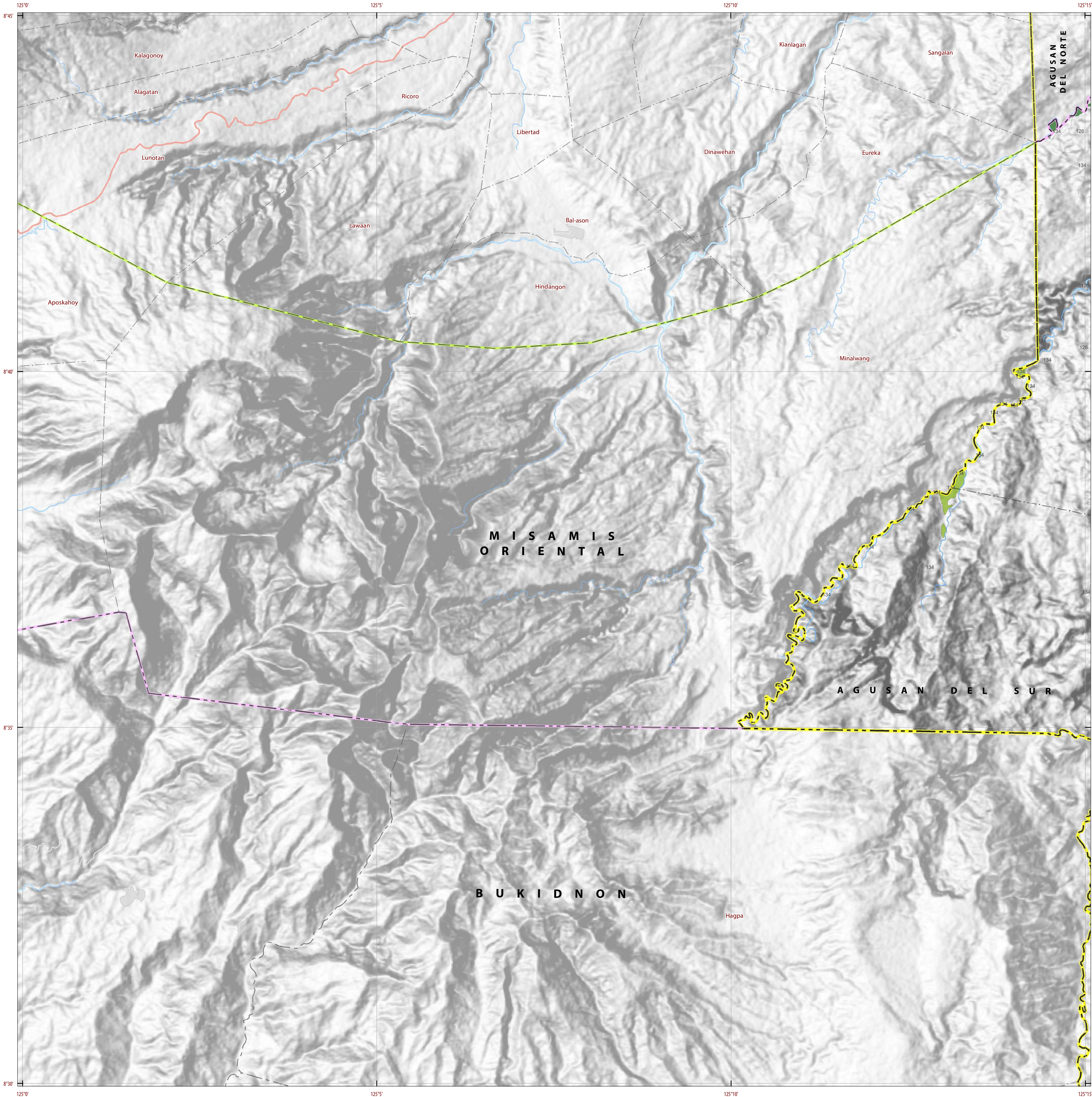
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PROVINCE OF AGUSAN DEL SUR

Sheet 4 of 21 Sheet No. 4118-I





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

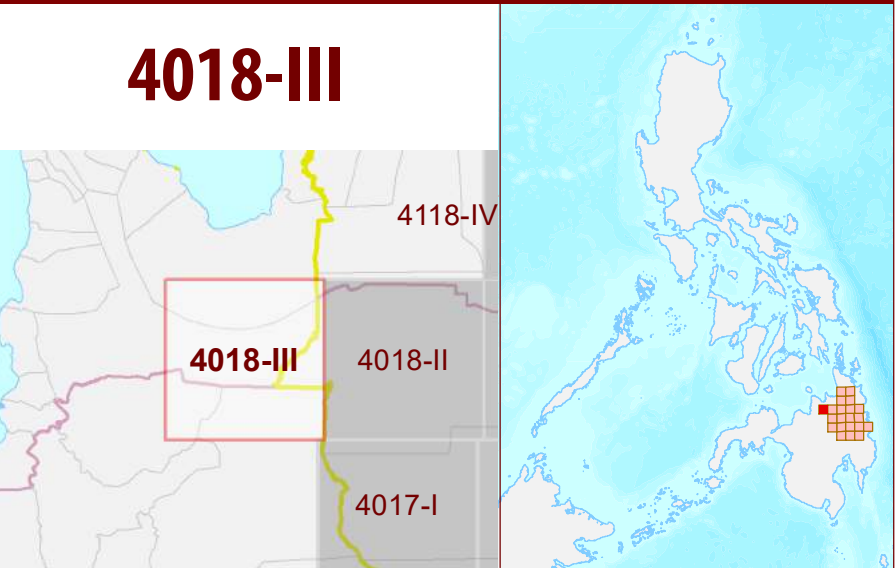
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

**SOURCES OF INFORMATION** : Topographic information taken from NAMRIA Topographic Map at 1:50,000 scale. Land resources information from the Agricultural Land Management and Evaluation Division (ALMED), Soils Survey Division (SSD) and Laboratory Services Division (LSD) of BSWM. Rice areas obtained from the Land Use System (FAO, 2015) and Philippine Rice Information System (PRISM) (IRRI, 2015). Data analysis and compilation through the **Land Resources Evaluation and Suitability Assessment of Strategic Production Areas for Major Commodities Project** implemented by BSWM (2017).

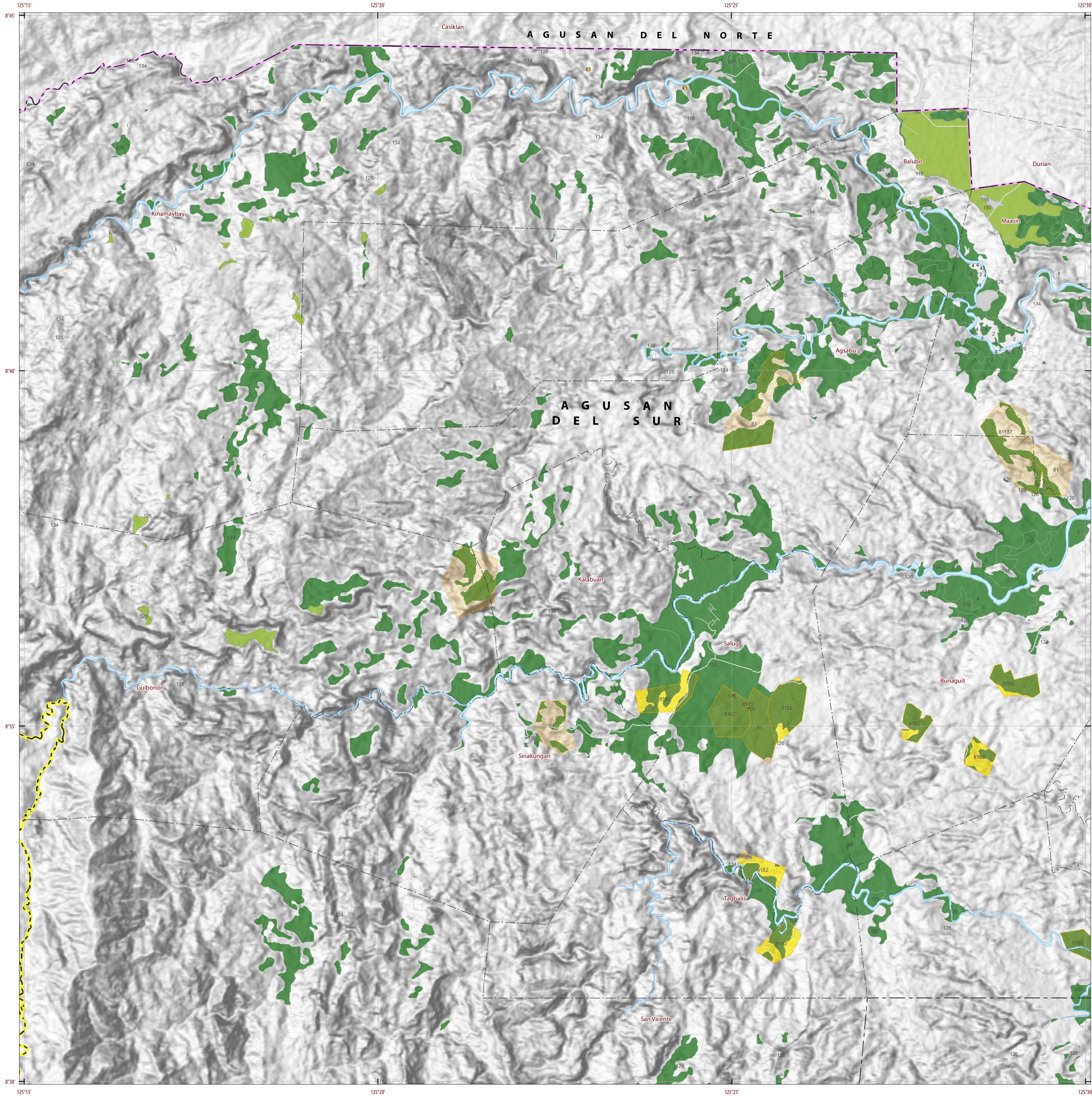
Project Leader : BERNARDO B. PASCUA  
GIS and Cartography : IRVIN K. SAMALCA  
Funding Agency : Department of Agriculture - Bureau of Agricultural Research (DA-BAR)  
Collaborating Agencies : Philippine Council on Agriculture and Fisheries (PCAF)  
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Tel/Fax No. : (+632) 332-9534 E-mail: bswmclientcenter@yahoo.com





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

**Not Suitable/ Not Relevant**

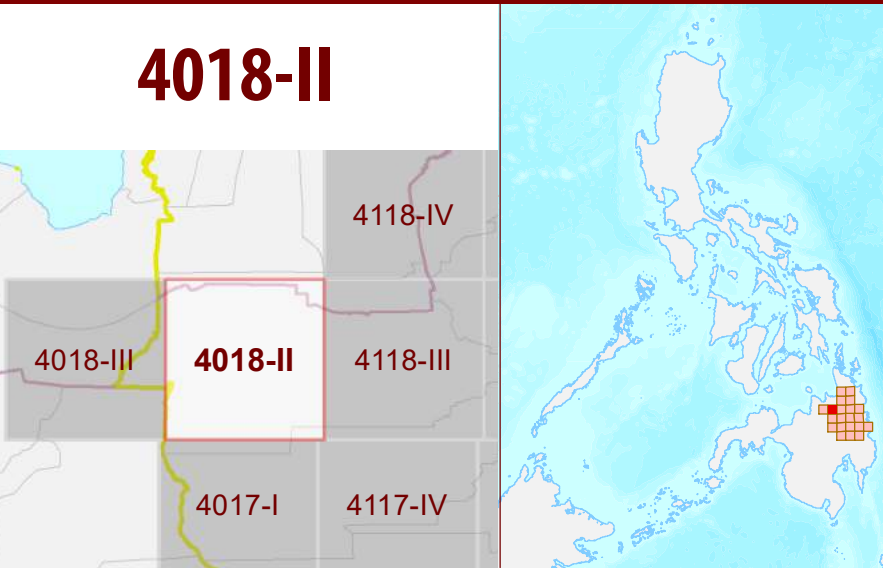
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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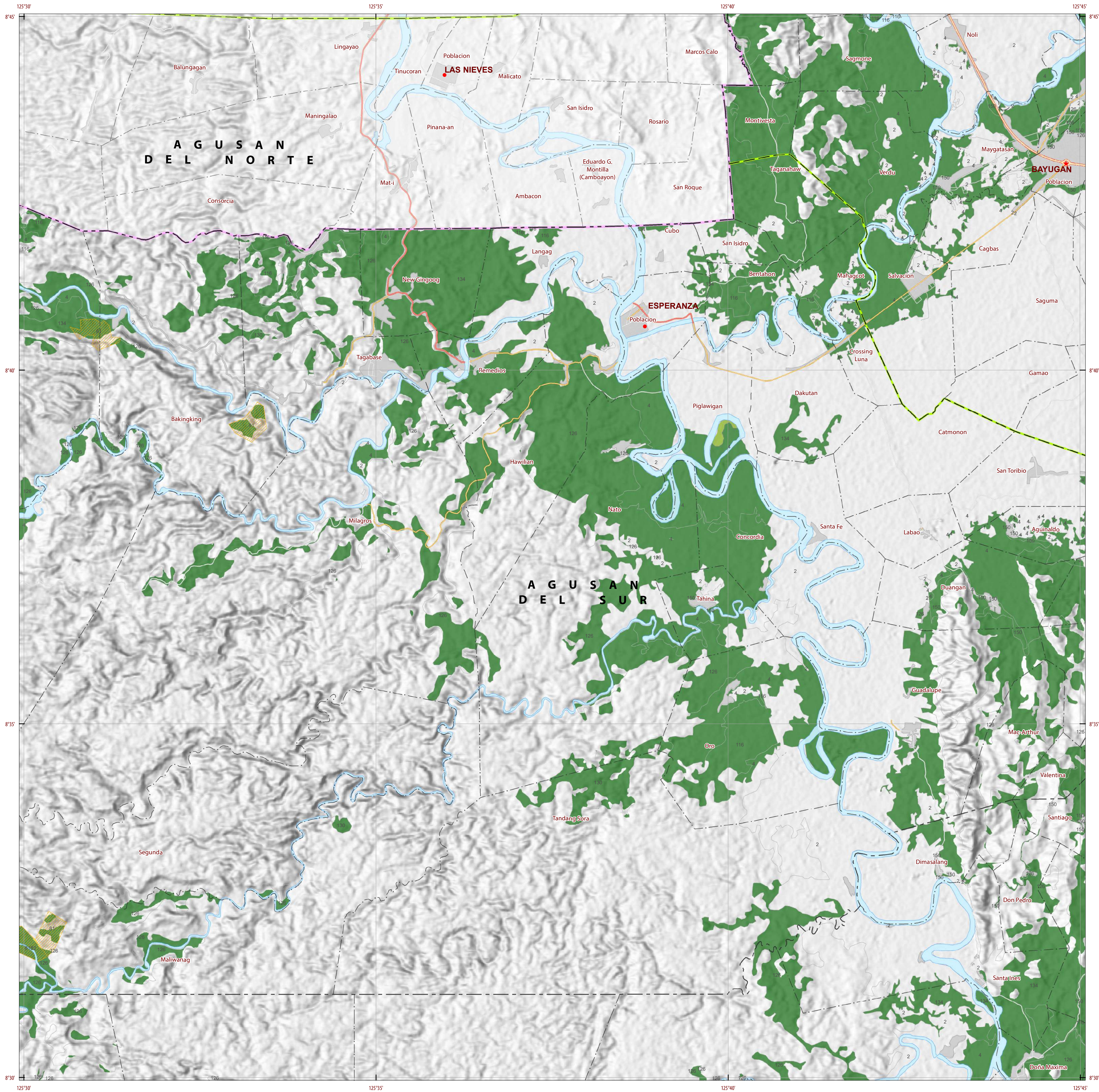
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## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
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#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

**Not Suitable/ Not Relevant**

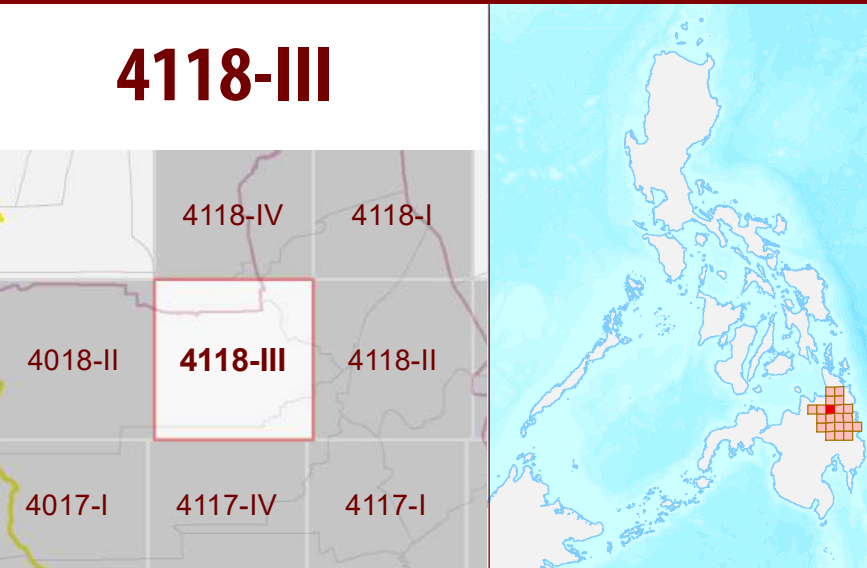
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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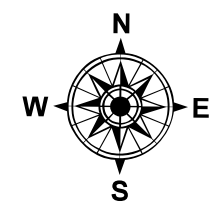
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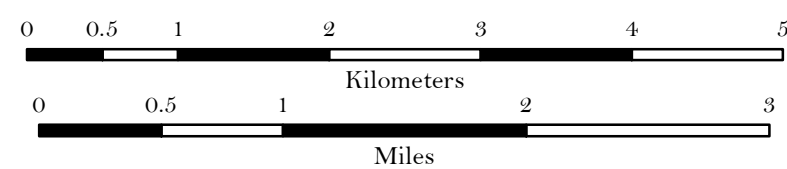
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## LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



**SCALE 1 : 50 000**



Universal Transverse Mercator Zone 51 N. PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative

### LEGEND

### SUITABILITY CLASSES

- |    |  |
|----|--|
| S1 | <b>Highly Suitable</b> - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.  |
| S2 | <b>Moderately Suitable</b> - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land. |
| S3 | <b>Marginally Suitable</b> - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.   |





☐ Not Suitable/ Not Relevant

### OTHER SIGNS

- 
 NGP Areas  
 Cacao
- 
 Land limitation  
 Land use

## CONVENTIONAL SIGNS

## ROADS

-  Express
-  Trunk line
-  Primary
-  Secondary
-  Tertiary

## BOUNDARY

- 

## PLACES

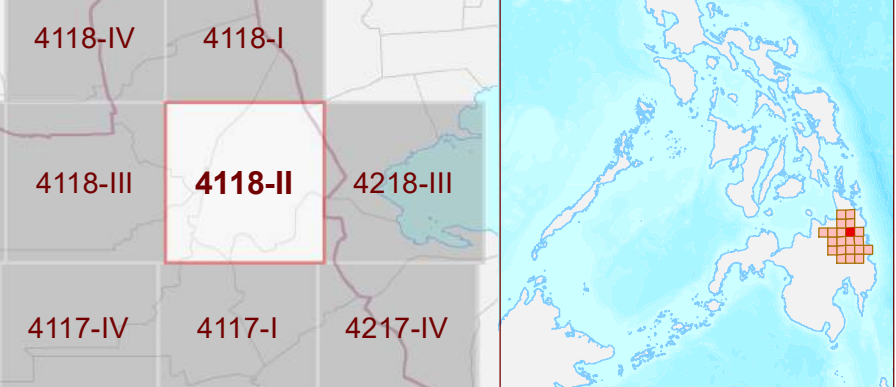
- |           |              |     |                     |
|-----------|--------------|-----|---------------------|
| Secondary | Municipality | ★ ★ | Capital City / City |
| Tertiary  | Barangay     | ● ● | Capital Town / Town |

## LAND U.S.

- Legend: Built-up Fishpond Mangrove

## ADJOINING SHEETS

**4118-II**




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 Tel/Fax No. : (+632) 332-9534 E-mail : [bswmclientcenter@yahoo.com](mailto:bswmclientcenter@yahoo.com)





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
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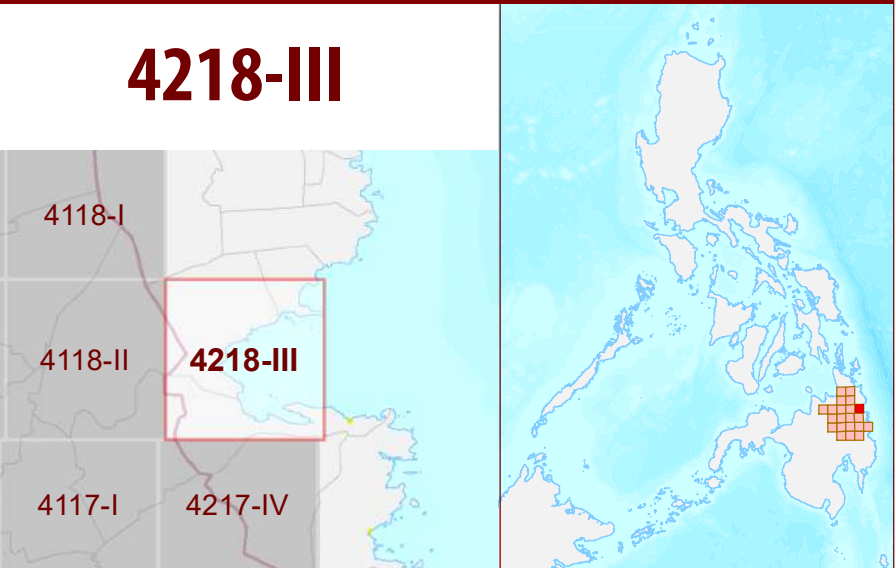
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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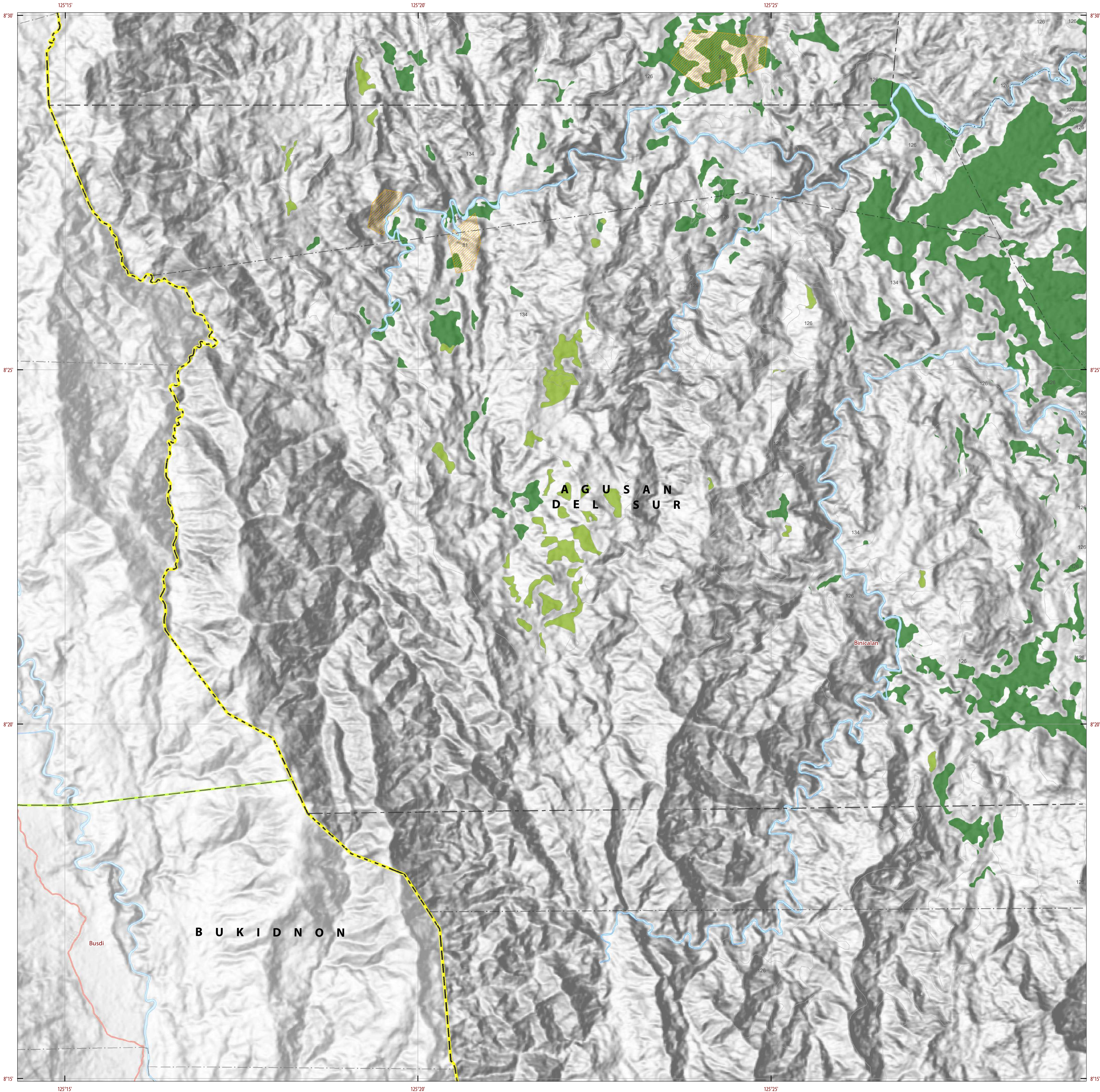
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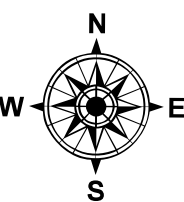








LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
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SUITABILITY CLASSES

S1

**Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2


**Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.


S3

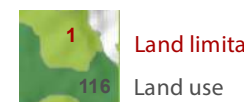
**Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

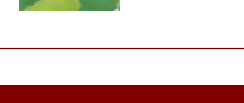
**Not Suitable/ Not Relevant**

OTHER SIGNS

 NGP Areas


 Cacao

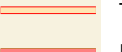
 Land limitation


 Land use


CONVENTIONAL SIGNS

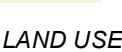
ROADS

 Expressway

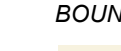
 Trunk line


 Primary


 Secondary


 Tertiary


BOUNDARY

 Region

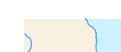
 Province


 District

 Municipality

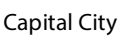
 Barangay

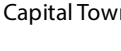
HYDROLOGY

 Sea / Shoreline


 Lakes / Rivers


PLACES


 Capital City / City

 Capital Town / Town

LAND USE

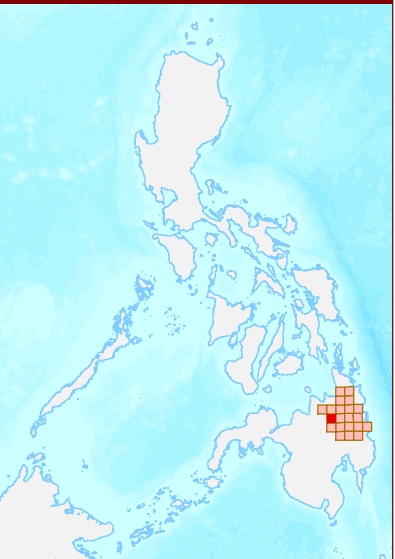
 Built-up

 Fishpond

 Mangrove

ADJOINING SHEETS

4017-I



MISCELLANEOUS INFORMATION

SOURCES OF INFORMATION : Topographic information taken from NAMRIA Topographic Map at 1:50,000 scale. Land resources information from the Agricultural Land Management and Evaluation Division (ALMED), Soils Survey Division (SSD) and Laboratory Services Division (LSD) of BSWM. Rice areas obtained from the Land Use System (FAO, 2015) and Philippine Rice Information System (PRISM) (IRRI, 2015). Data analysis and compilation through the **Land Resources Evaluation and Suitability Assessment of Strategic Production Areas for Major Commodities Project** implemented by BSWM (2017).

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BUREAU OF SOILS AND WATER MANAGEMENT

SRDC Bldg, Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101

Tel/Fax No. : (+632) 332-9534 E-mail: [bswmcenter@da.gov.ph](mailto:bswmcenter@da.gov.ph)

PROVINCE OF AGUSAN DEL SUR

Sheet 10 of 21

Sheet No. 4017-I





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

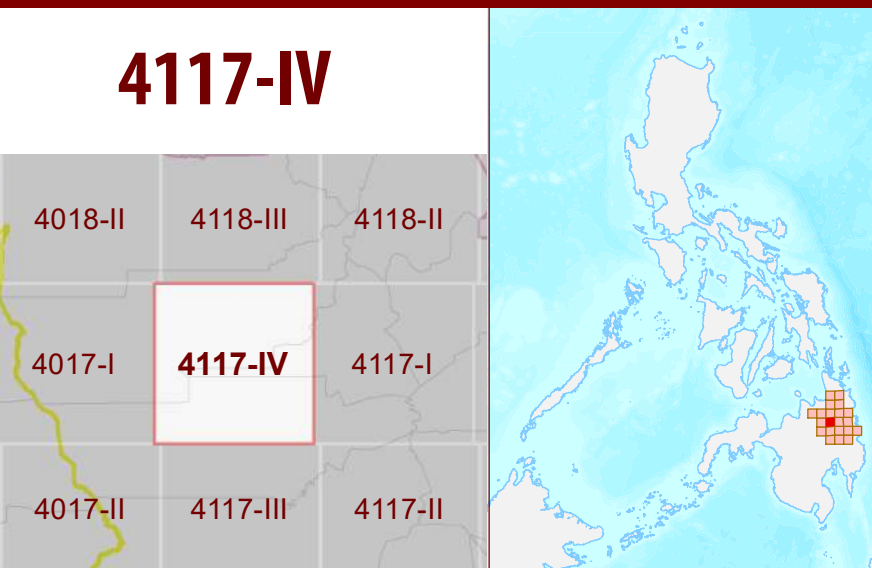
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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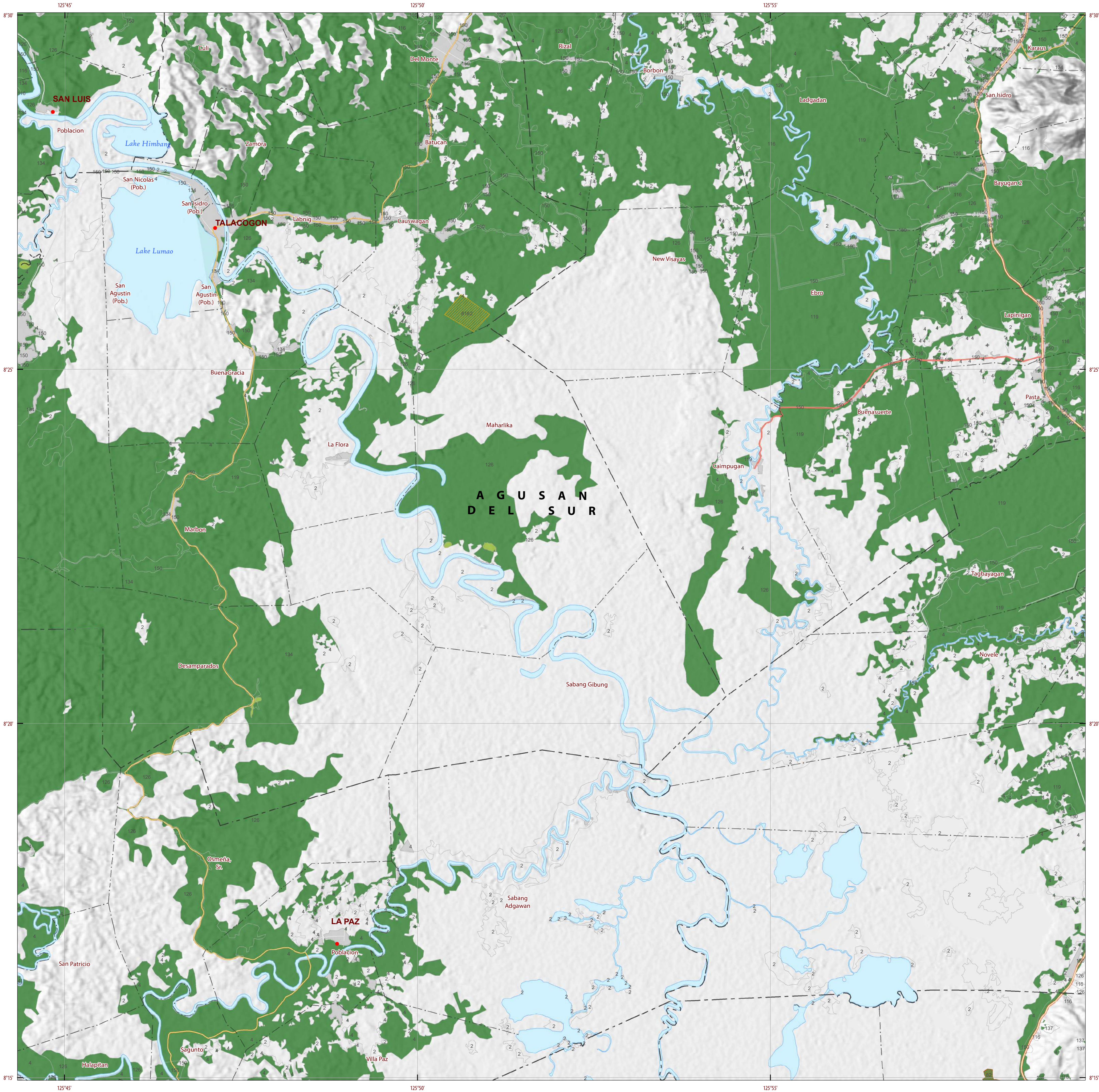
Project Leader : BERNARDO B. PASCUA  
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Funding Agency : Department of Agriculture - Bureau of Agricultural Research (DA-BAR)  
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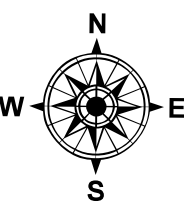








LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

LEGEND

SUITABILITY CLASSES

S1

Highly Suitable

- Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2

Moderately Suitable

- Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.

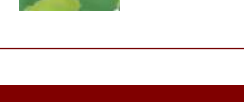
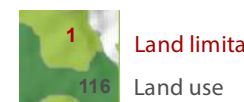


S3

Marginally Suitable

- Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

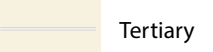
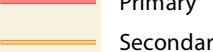
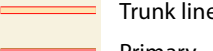

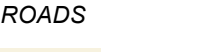
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OTHER SIGNS


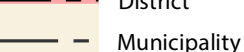
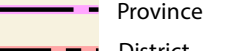




CONVENTIONAL SIGNS

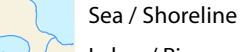

ROADS



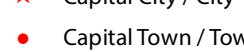

BOUNDARY





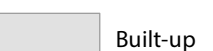
HYDROLOGY



PLACES



LAND USE



ADJOINING SHEETS

4117-I

4118-III

4118-II

4118-III

4117-IV

4117-I

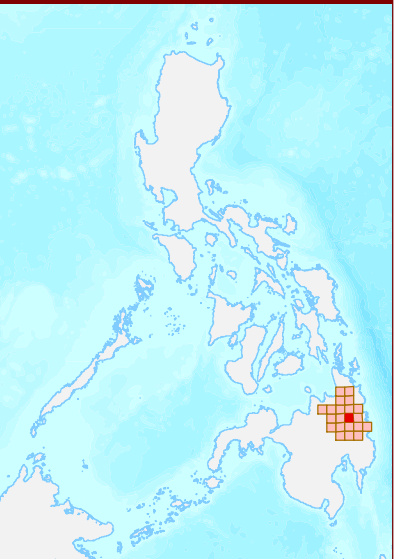
4117-IV

4117-III

4117-II

4117-III

INDEX MAP



MISCELLANEOUS INFORMATION

SOURCES OF INFORMATION

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Project Leader

: BERNARDO B. PASCUA

GIS and Cartography

: IRVIN K. SAMALCA

Funding Agency


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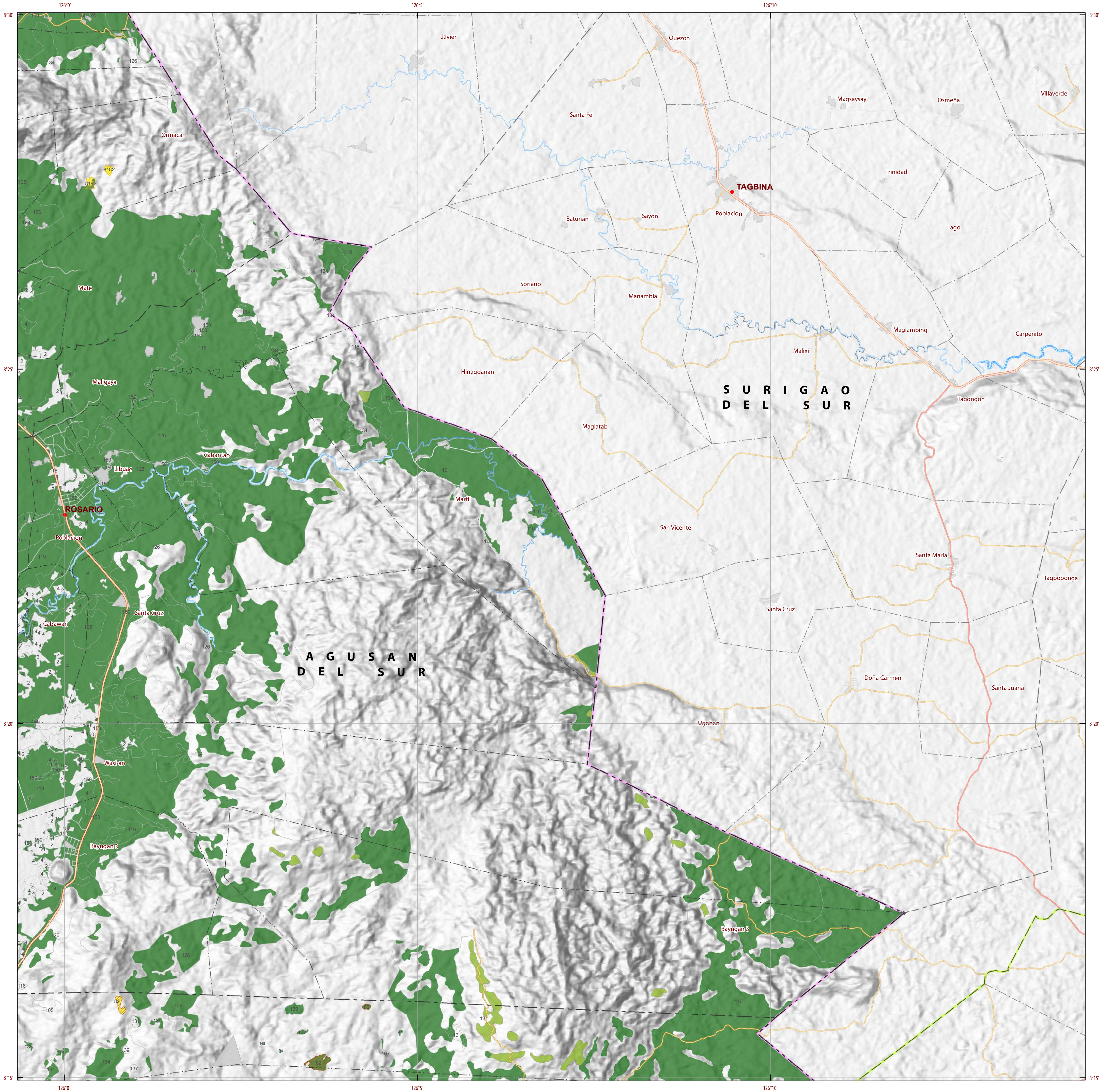
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PROVINCE OF AGUSAN DEL SUR

Sheet 12 of 21

Sheet No. 4117-I





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

**SCALE 1 : 50 000**

Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

**LEGEND**

**SUITABILITY CLASSES**

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
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- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

**Not Suitable/ Not Relevant**

**OTHER SIGNS**

- NGP Areas
- Cacao
- Land limitation
- Land use

**CONVENTIONAL SIGNS**

**ROADS**

- Expressway
- Trunk line
- Primary
- Secondary
- Tertiary

**BOUNDARY**

- Region
- Province
- District
- Municipality
- Barangay

**HYDROLOGY**

- Sea / Shoreline
- Lakes / Rivers

**PLACES**

- Capital City / City
- Capital Town / Town

**LAND USE**

- Built-up
- Fishpond
- Mangrove

**ADJOINING SHEETS**

**4217-IV**

**INDEX MAP**

**MISCELLANEOUS INFORMATION**

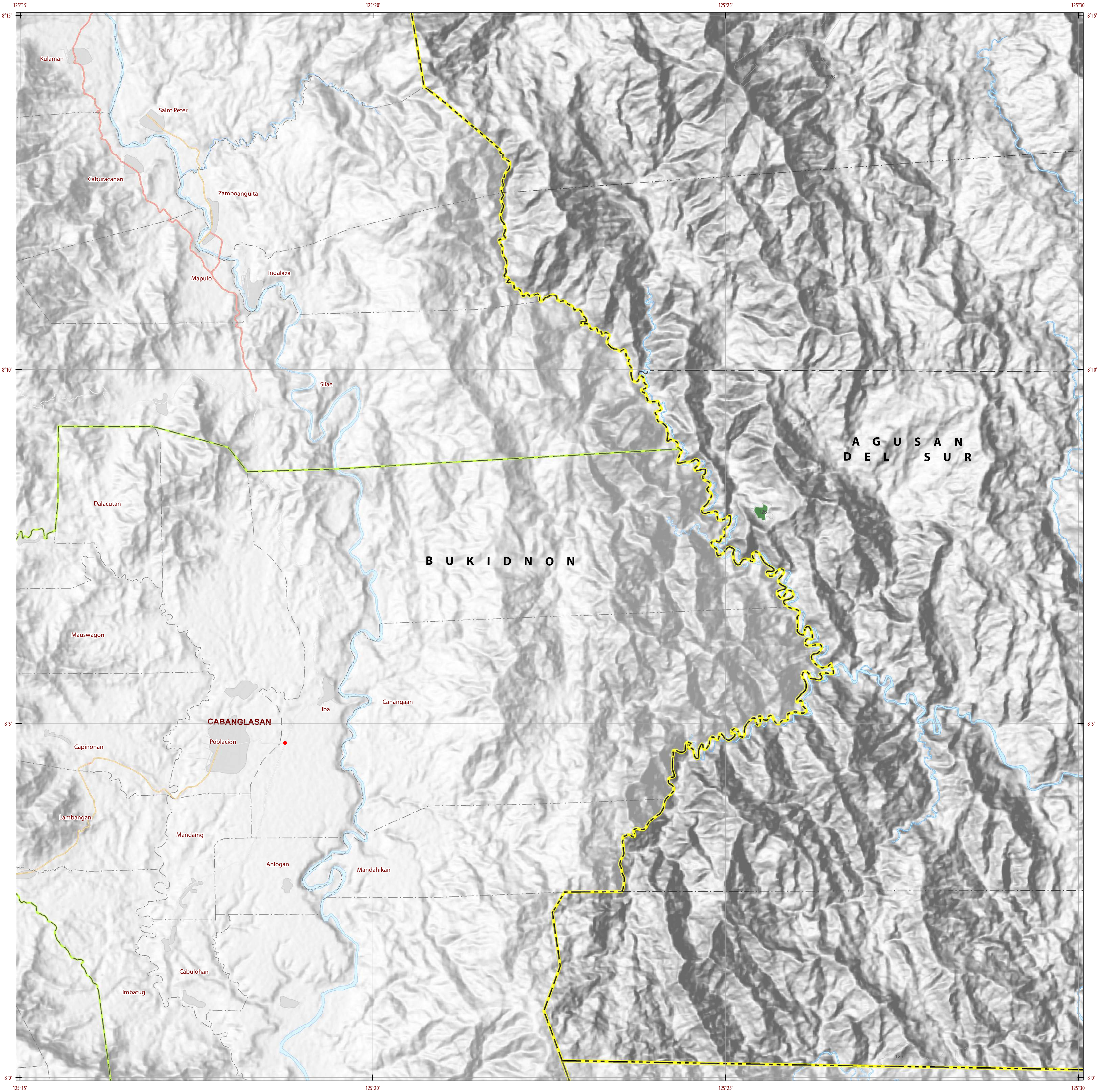
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## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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#### LEGEND

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Not Suitable/ Not Relevant

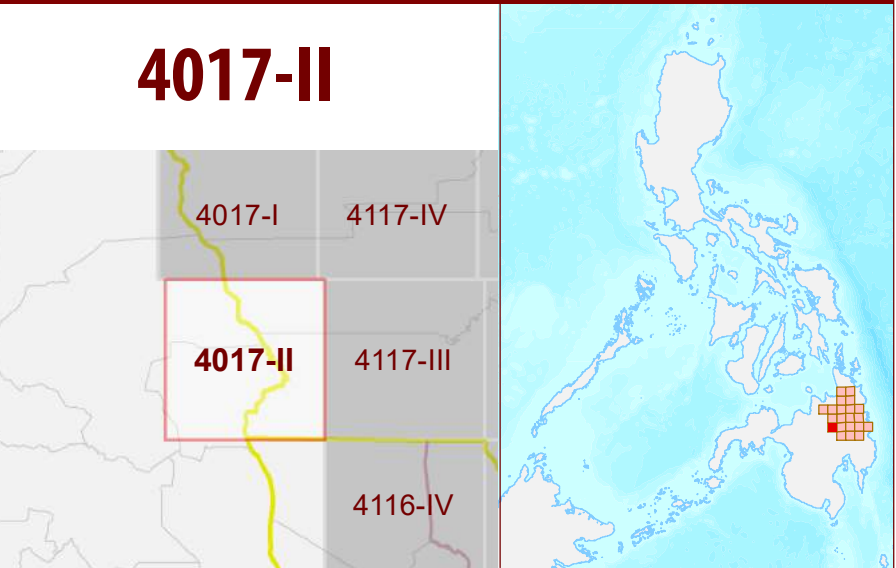
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
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  - Municipality
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  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



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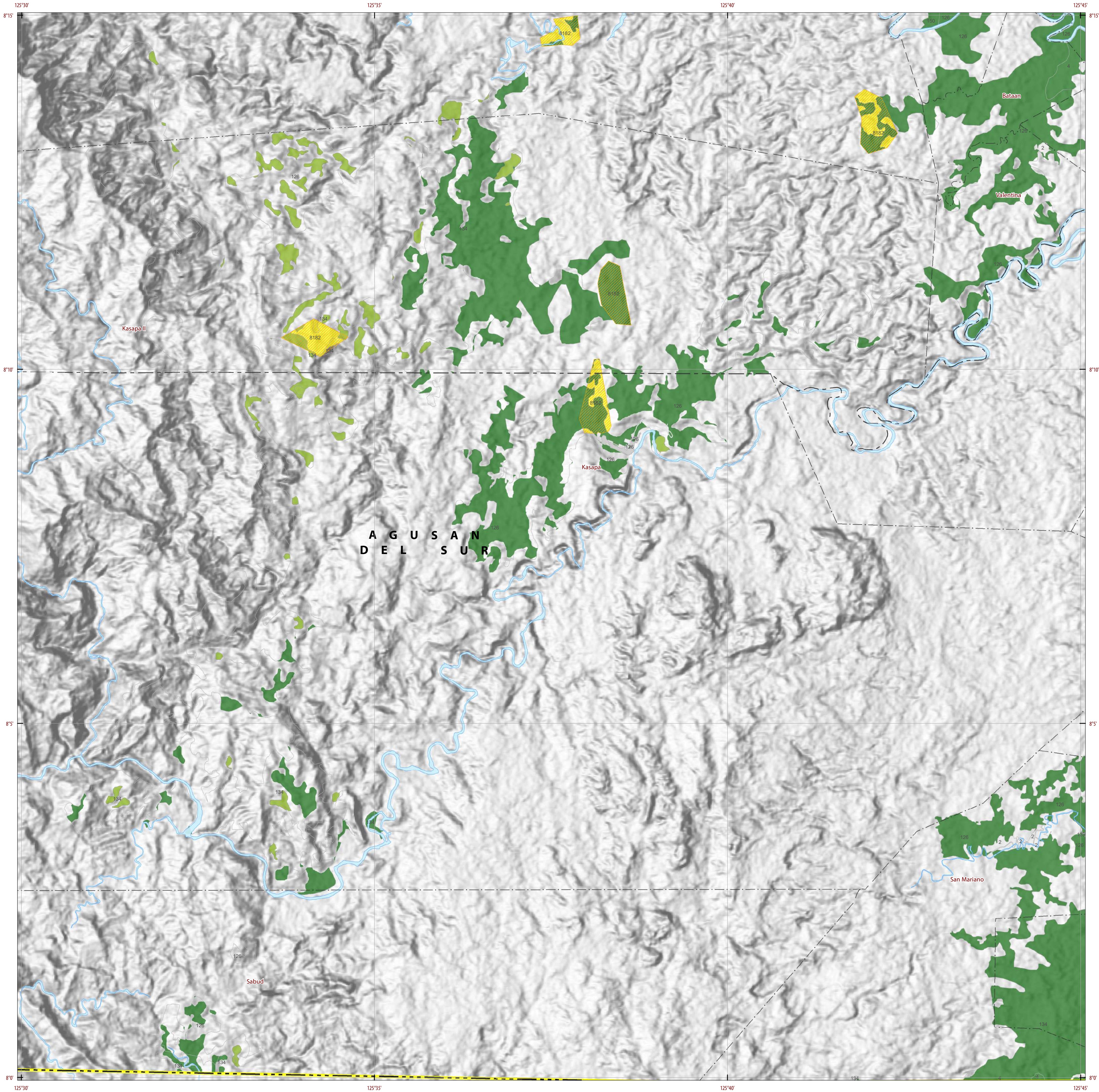
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SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101  
Tel/Fax No. : (+632) 332-9534 E-mail : bswmcenter@da.gov.ph





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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#### LEGEND

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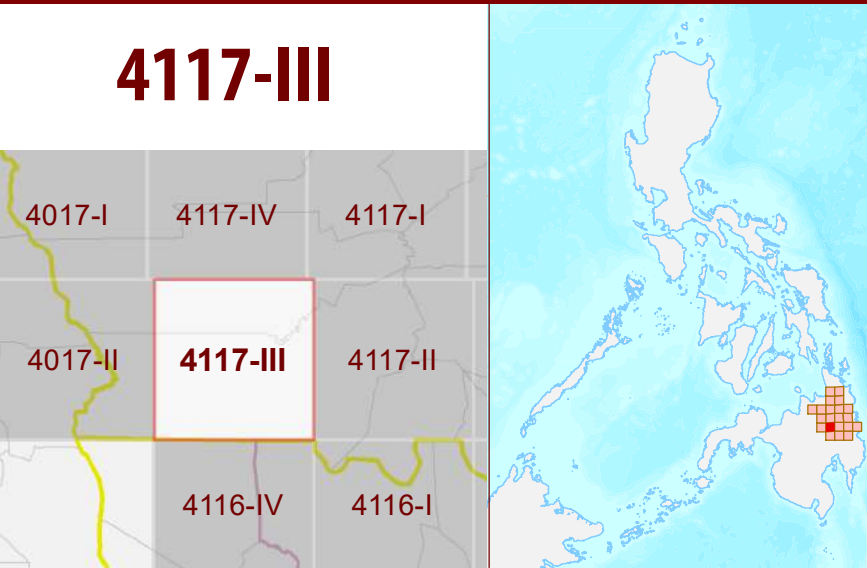
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
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  - Sea / Shoreline
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- PLACES**
  - Capital City / City
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#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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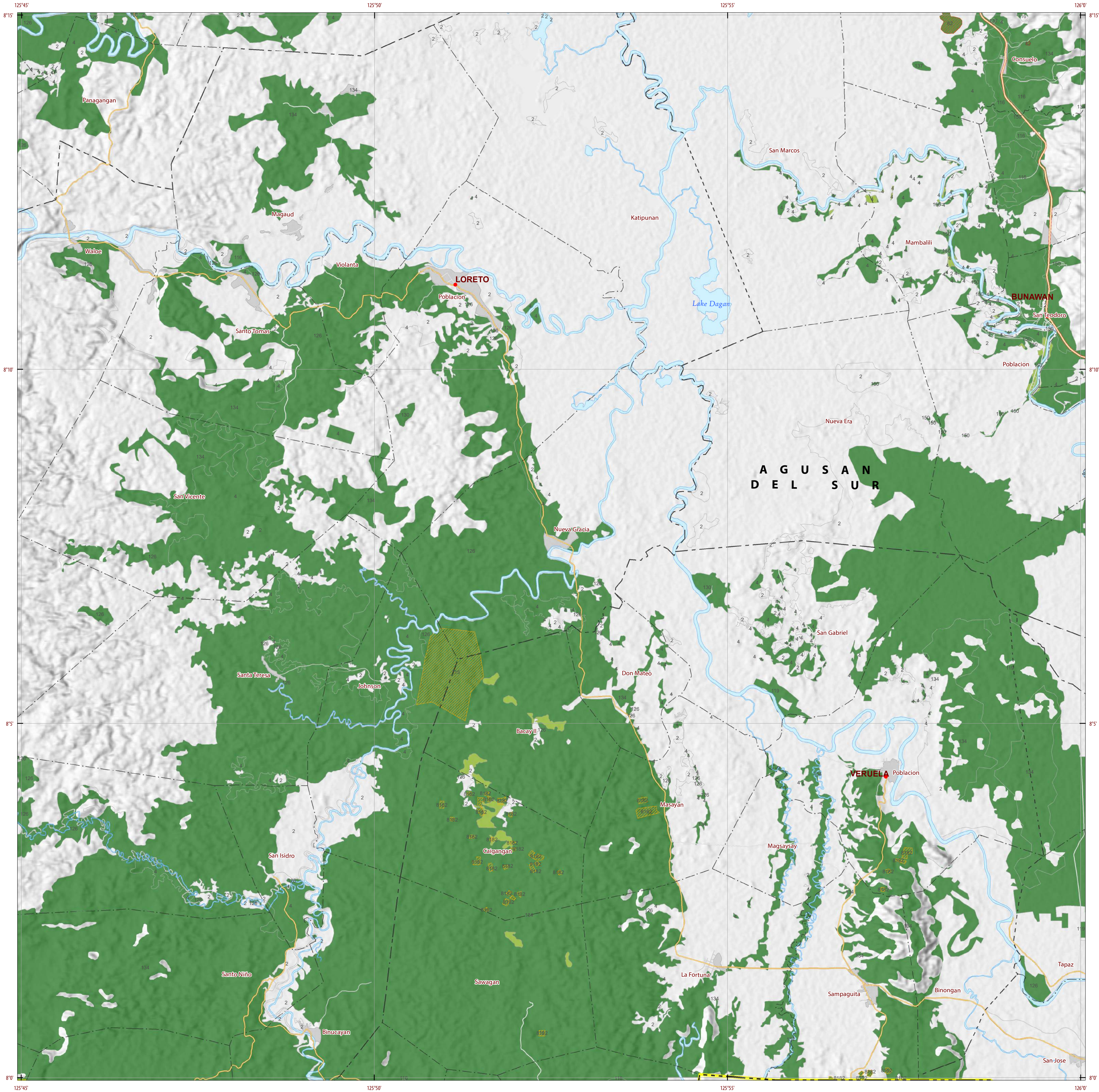
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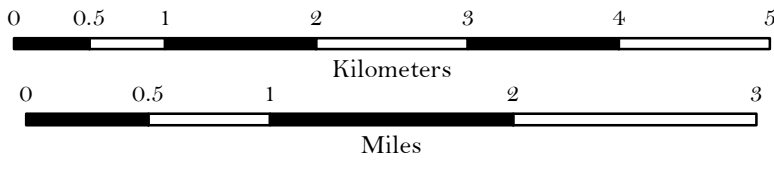


## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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#### LEGEND

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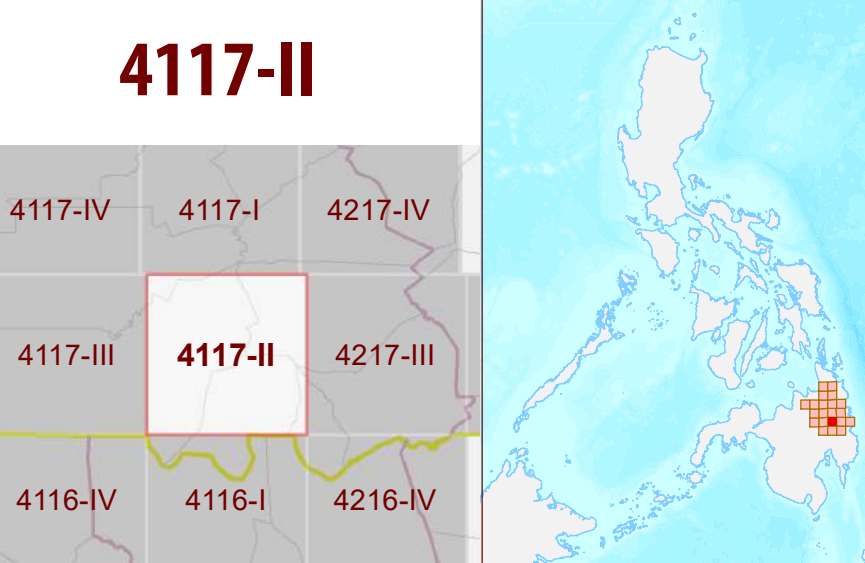
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- NGP Areas
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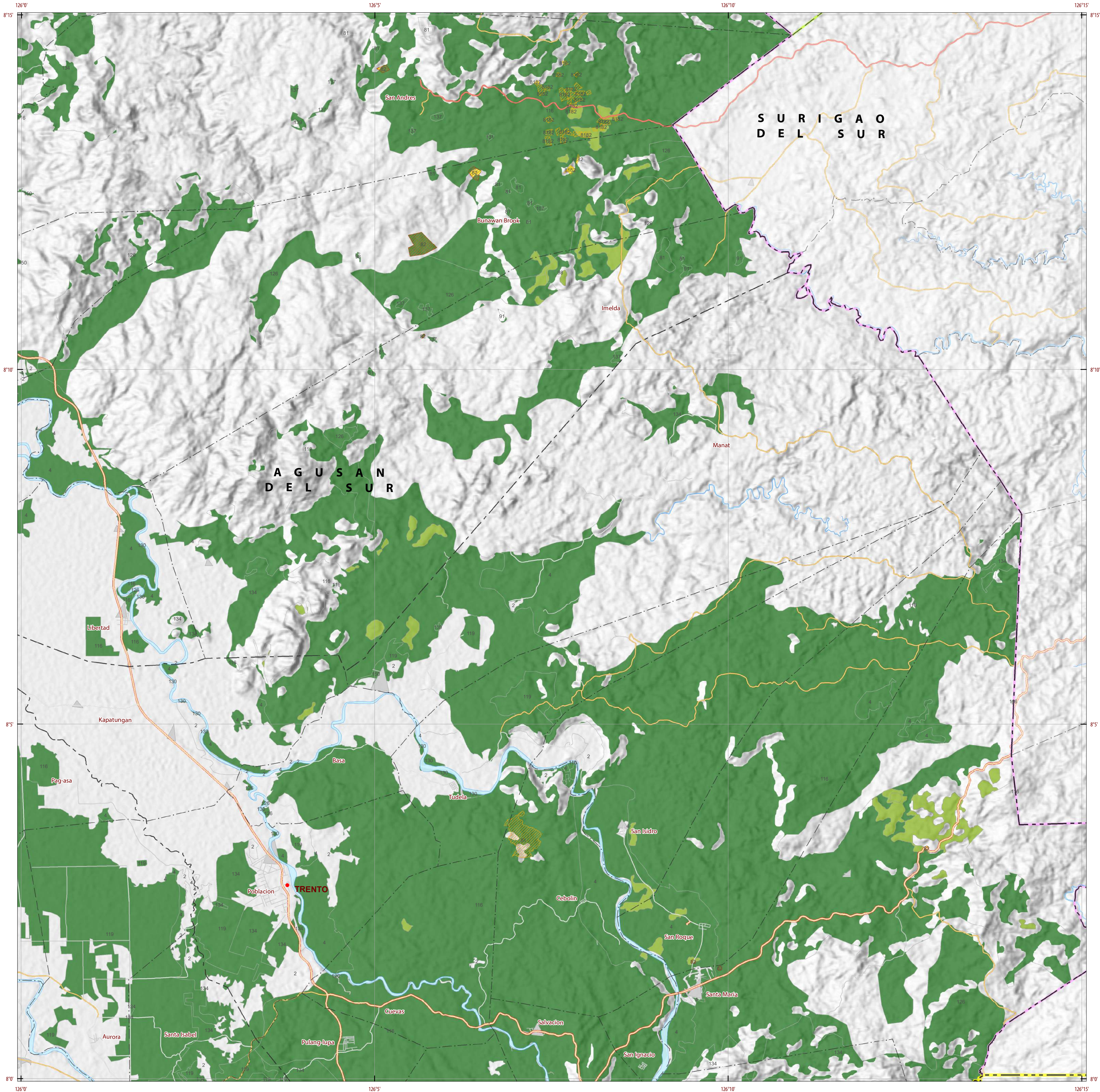
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BUREAU OF SOILS AND WATER MANAGEMENT  
SRDC Bldg, Elliptical Road Cor. Visayas Avenue, Dilliman, Quezon City 1101  
Tel/Fax No. : (+632) 332-9534 E-mail: bswmcenter@da.gov.ph





LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

LEGEND

SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
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Not Suitable/ Not Relevant

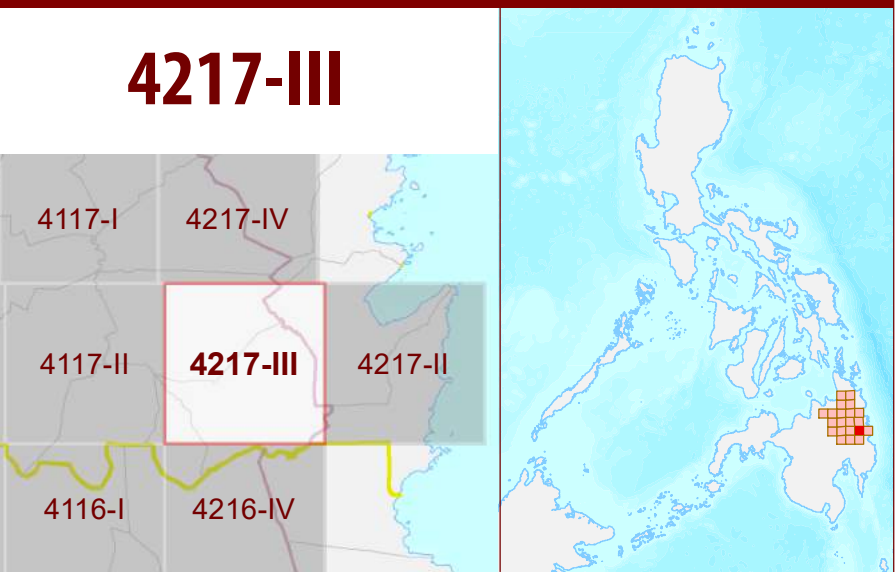
OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

ADJOINING SHEETS



MISCELLANEOUS INFORMATION

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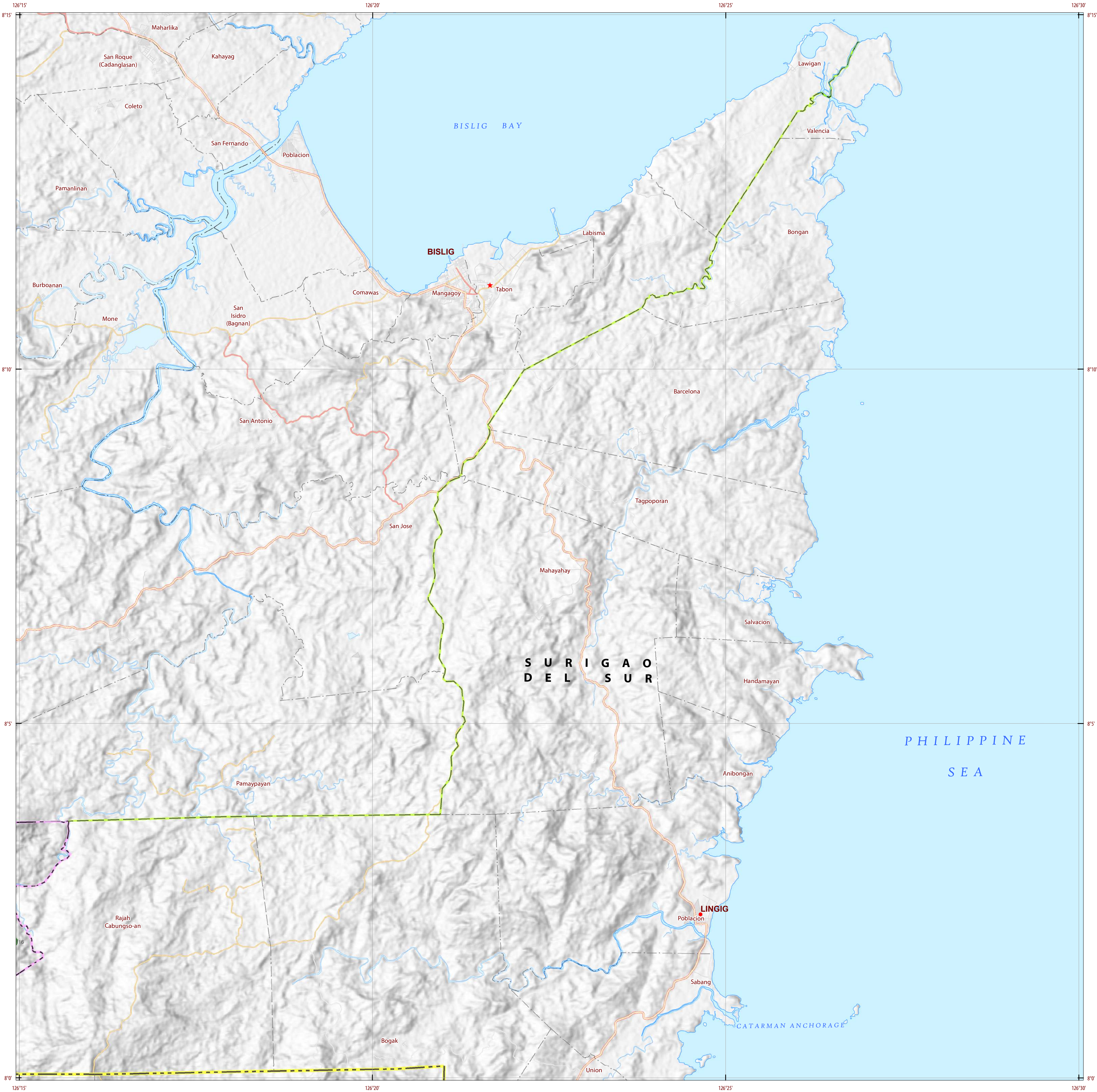
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CACAO

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ASSESSMENT OF STRATEGIC PRODUCTION AREAS



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Not Suitable/ Not Relevant

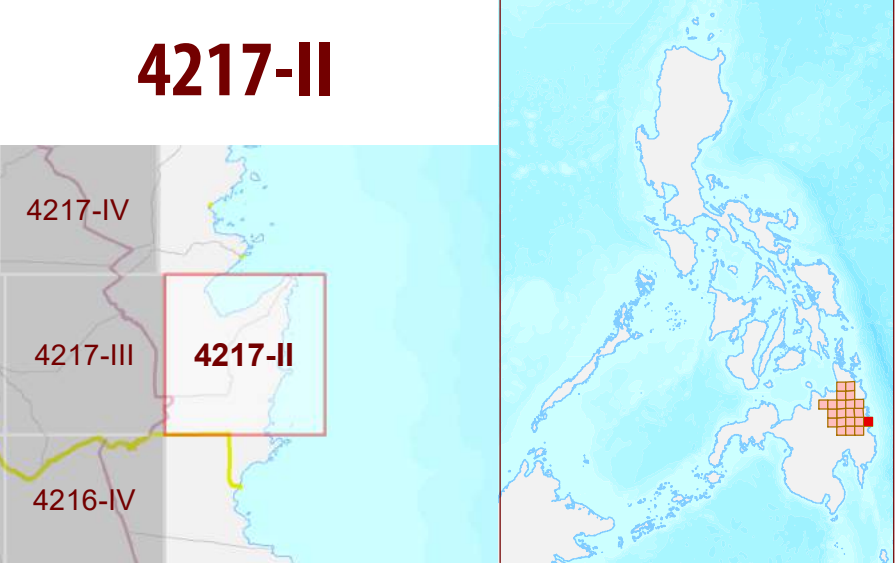
OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
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- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

ADJOINING SHEETS



MISCELLANEOUS INFORMATION

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SRDC Bldg, Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101  
Tel/Fax No. : (+632) 332-9534 E-mail: bswmcenter@da.gov.ph





## LAND SUITABILITY MAP CACAO

### LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum  
DISCLAIMER : All political boundaries are not authoritative.

#### LEGEND

##### SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

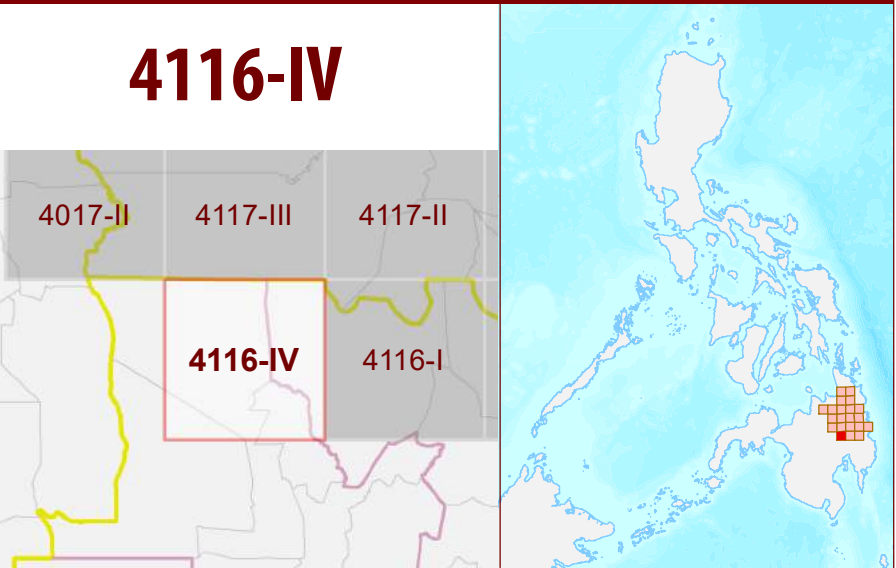
##### OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

#### CONVENTIONAL SIGNS

- ROADS**
  - Expressway
  - Trunk line
  - Primary
  - Secondary
  - Tertiary
- BOUNDARY**
  - Region
  - Province
  - District
  - Municipality
  - Barangay
- HYDROLOGY**
  - Sea / Shoreline
  - Lakes / Rivers
- PLACES**
  - Capital City / City
  - Capital Town / Town
- LAND USE**
  - Built-up
  - Fishpond
  - Mangrove

#### ADJOINING SHEETS



#### MISCELLANEOUS INFORMATION

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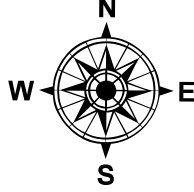





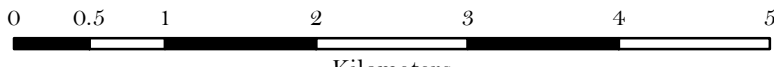


LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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LEGEND

SUITABILITY CLASSES

S1

Highly Suitable - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2

Moderately Suitable - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.

S3

Marginally Suitable - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

OTHER SIGNS

 NGP Areas

 Cacao

 Land limitation

 Land use

CONVENTIONAL SIGNS

ROADS

 Expressway

 Trunk line

 Primary

 Secondary

 Tertiary

BOUNDARY

 Region

 Province

 District

 Municipality

 Barangay

HYDROLOGY

 Sea / Shoreline

 Lakes / Rivers

PLACES

 Capital City / City

 Capital Town / Town

LAND USE

 Built-up

 Fishpond

 Mangrove

ADJOINING SHEETS

4116-I

4117-III

4117-II

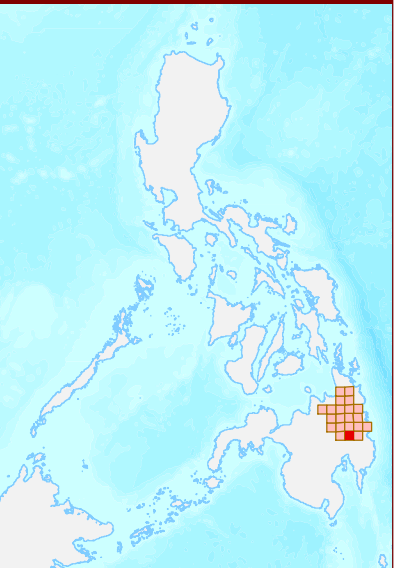
4217-III

4116-IV

4116-I

4216-IV

INDEX MAP



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PROVINCE OF AGUSAN DEL SUR

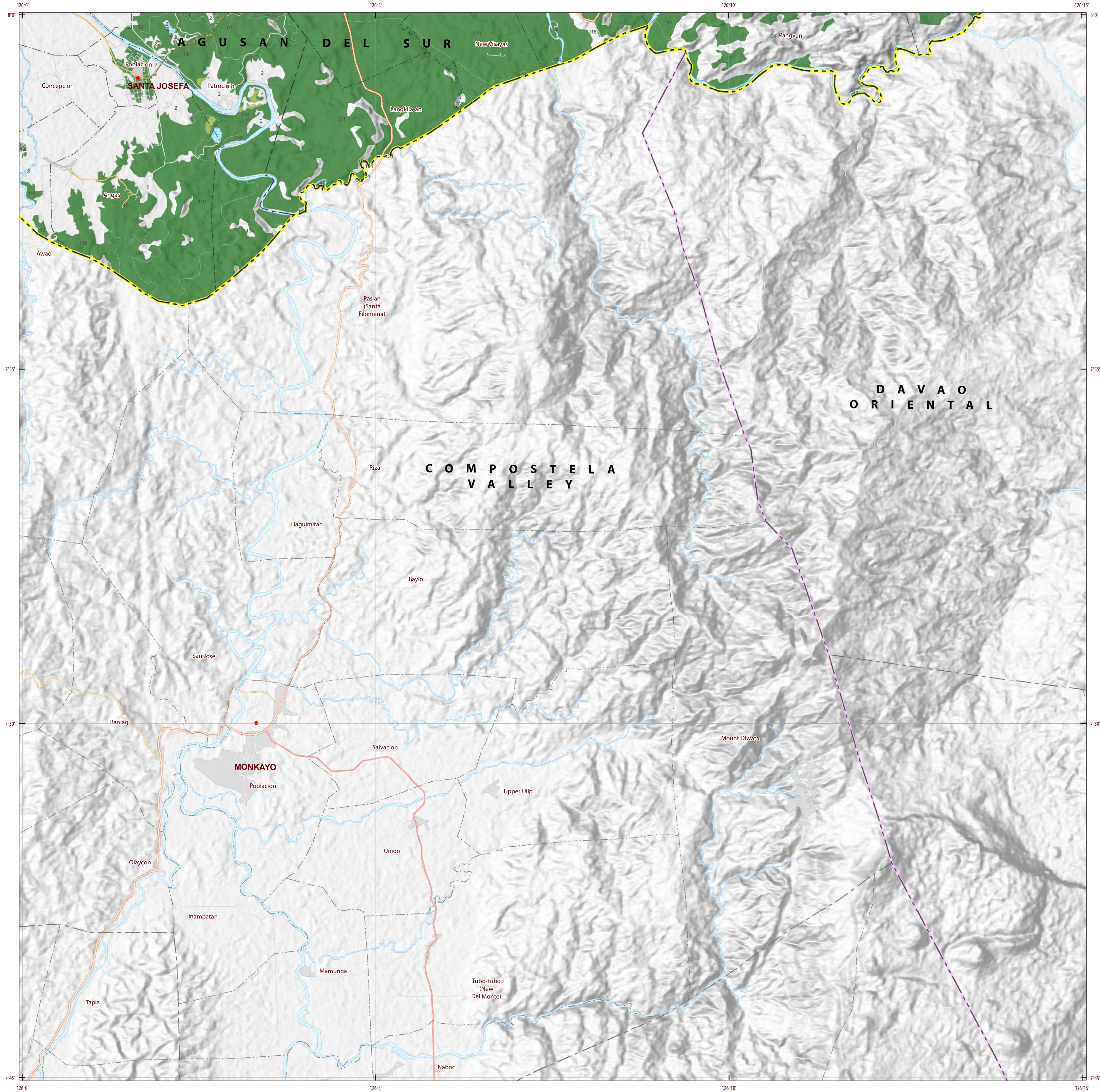
Sheet 20 of 21 Sheet No. 4116-I



4216-IV

PROVINCE OF AGUSAN DEL SUR

Jaguimitan



LAND SUITABILITY MAP  
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY  
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



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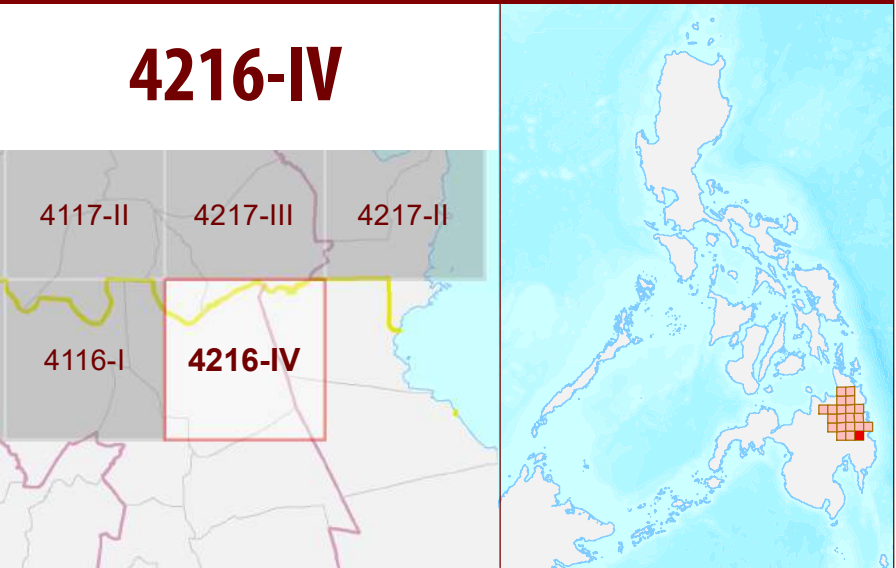
OTHER SIGNS

- NGP Areas  
Cacao  
Land limitation  
Land use

CONVENTIONAL SIGNS

- ROADS**  
Expressway  
Trunk line  
Primary  
Secondary  
Tertiary
- BOUNDARY**  
Region  
Province  
District  
Municipality  
Barangay
- HYDROLOGY**  
Sea / Shoreline  
Lakes / Rivers
- PLACES**  
Capital City / City  
Capital Town / Town
- LAND USE**  
Built-up  
Fishpond  
Mangrove

ADJOINING SHEETS



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