LAND SUITABILITY MAP

NATURAL RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

PROVINCE OF SURIGAO DEL SUR

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRICULTURE
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MAP INDEX

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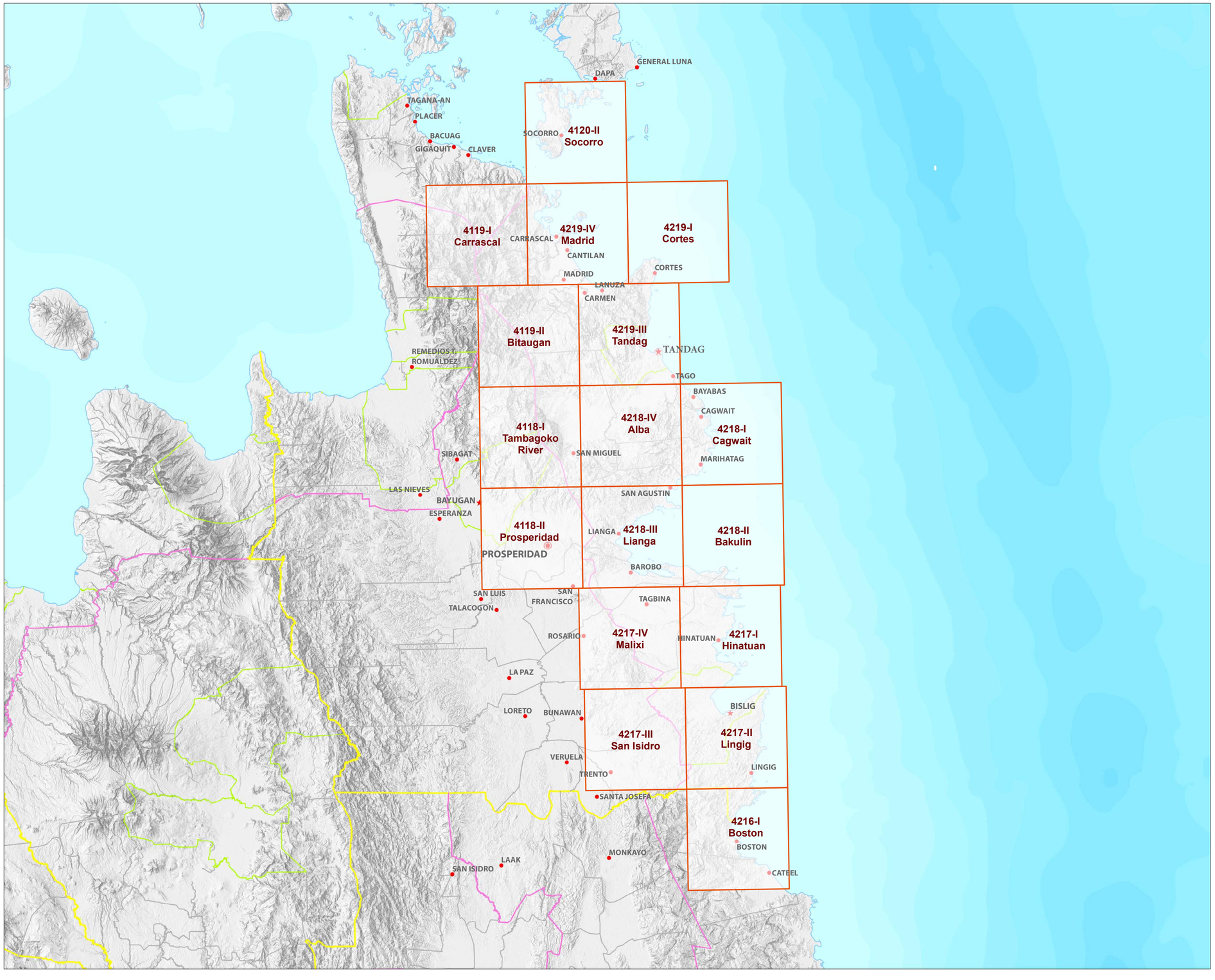
PROVINCE OF SURIGAO DEL SUR



LEGEND

Places

- Capital City
- City
- Capital Town
- Town

Administrative Boundary

- Regional
- Provincial
- City
- Municipal

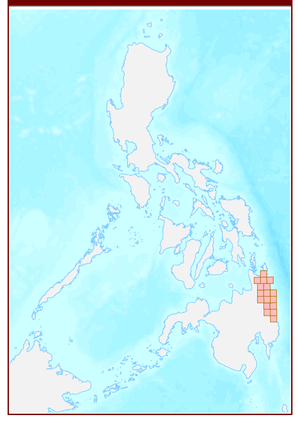
Map Index

- Index grid

Topographic Relief

Bathymetry

LOCATION MAP



MISCELLANEOUS INFORMATION

Land suitabilityinformation 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).

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LAND SUITABILITY MAP FOR RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

SURIGAO DEL SUR, REGION XIII

EXTENT OF SUITABILITY FOR RUBBER PRODUCTION BY MUNICIPALITY

MUNICIPALITY	EXISTING RUBBER (Ha)			TOTAL EXISTING AREA (Ha)	EXPANSION AREA (Ha)						CONFLICT RESOLUTION AREA (Ha)						TOTAL POTENTIAL EXPANSION AREA (Ha)
					Coconut		Shrubland, unmanaged*		Grassland, unmanaged*		Corn		Paddy rice, non-irrigated		Other crops		
	S1	S2	S3		S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	
BAROBO	-	-	-	-	7,521	6,371	118	622	33	39	461	98	-	-	-	-	15,264
BAYABAS	-	-	-	-	394	1,262	-	140	-	-	186	117	-	-	-	-	2,100
CAGWAIT	-	-	-	-	350	2,559	-	65	-	-	204	119	-	-	-	-	3,296
CANTILAN	-	-	-	-	791	420	29	81	38	100	1,808	143	-	-	-	-	3,409
CARMEN	-	-	-	-	635	54	39	198	23	94	273	17	-	-	-	-	1,334
CARRASCAL	-	-	-	-	228	510	596	754	109	927	308	33	-	-	-	-	3,467
CITY OF BISLIG	-	-	-	-	5,770	8,713	338	2,204	381	251	1,170	116	-	-	-	-	18,943
CITY OF TANDAG	-	-	-	-	1,009	3,094	5	311	22	124	302	357	-	-	-	-	5,225
CORTES	-	-	-	-	711	1,643	1	39	-	-	91	43	-	-	-	-	2,529
HINATUAN	-	-	-	-	12,073	12,183	89	843	103	599	369	35	-	-	-	-	26,293
LANUZA	-	-	-	-	790	297	3	274	18	281	129	2	-	-	-	-	1,795
LIANGA	-	-	-	-	884	2,669	8	338	-	137	61	16	-	-	-	-	4,112
LINGIG	-	-	-	-	63	2,594	19	787	7	151	34	49	-	-	-	-	3,704
MADRID	-	-	-	-	658	492	12	47	43	20	1,594	38	-	-	-	-	2,904
MARIHATAG	-	-	-	-	1,124	3,467	23	620	-	73	699	112	-	-	-	-	6,117
SAN AGUSTIN	-	-	-	-	855	1,272	7	673	2	169	385	112	-	-	-	-	3,475
SAN MIGUEL	-	-	-	-	1,933	1,767	186	1,063	36	468	5,414	431	-	-	-	-	11,299
TAGBINA	-	-	-	-	19,311	12,016	295	164	422	993	160	65	-	-	-	-	33,427
TAGO	-	-	-	-	1,091	3,291	23	160	15	15	3,407	3,189	-	-	-	-	11,192
TOTAL	-	-	-	-	56,193	64,675	1,791	9,384	1,252	4,442	17,055	5,092	-	-	-	-	**159,885**

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

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 RUBBER 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
Rubber Tree	S1	<8	>100	CL, SiCL, SCL, SC, SiC, C, HC	WD,MWD, SPD	5.6 -7.2	high	none-slight	none-slight	none-few	<500	1000-2000	III, IV
	S2	8 - 30	30 - 100	FSL, L, SiL, SL	PD,VPD	4.5 - 5.5 7.3 - 7.8	medium	moderate	moderate	common	500-1000	2001-4500	I, II, III
	S3	>30	<30	S, LS, CSL	ED	<4.5 - > 7.9	low	severe	severe	many	>1000	<1000 >4500	

SLOPE (%)
0 - 3 - level to gently sloping
3 - 8 - gently sloping to undulating
8 - 18 - undulating to rolling
18 - 30 - rolling to moderately steep
30 - 50 - steep
> 50 - very steep

SOIL DRAINAGE
ED - excessively drained
WD - well drained
MWD - moderately well drained
SPD - somewhat poorly drained
PD - poorly drained
VPD - very poorly drained

SOIL REACTION (pH)
< 4.5 - extremely acid
4.5 - 5.0 - very strongly acid
5.1 - 5.5 - strongly acid
5.6 - 6.0 - medium acid
6.1 - 6.5 - slightly acid
6.6 - 7.2 - neutral
7.3 - 7.8 - mildly alkaline
7.9 - 8.4 - moderately alkaline
> 8.5 - strongly alkaline

SOIL TEXTURE
Coarse
S - sand
LS - loamy sand
CSL - coarse sandy loam
SL - sandy loam
Medium
FSL - fine sandy loam
L - loam
SiL - silt loam
CL - clay loam
SiCL - silty clay loam
SCL - sandy clay loam
Fine
SC - sandy clay
SiC - silty clay
C - clay
HC - heavy clay

SOIL DEPTH (cm)
0 - 30 - very shallow
30 - 50 - shallow
50 - 100 - moderately deep
> 100 - deep to very deep

SURFACE IMPEDIMENT
ROCK OUTCROPS
< 10% - none - few
10 - 30% - common
> 30% - many

LAND LIMITATIONS DESCRIPTION AND COMBINATIONS

ELEVATION
El2 - 500 - 1000m or 2000 - 2500m
El3 - < 500m or > 2500m

SLOPE/TOPOGRAPHY
T2 - Undulating to moderately steep
T3 - Steep to very steep

SOIL DRAINAGE
D2 - Somewhat poorly drained to poorly drained
D3 - Very poorly drained or excessively drained

SOIL TEXTURE
Tc - Coarse texture

SOIL DEPTH
Sh2 - Shallow to moderately deep (30 - 100cm)
Sh3 - Very shallow (< 30cm)

ROCK OUTCROPS
Rc2 - Common
Rc3 - Many

SOIL EROSION
E2 - Moderate erosion
E3 - Severe erosion

FLOODING
F2 - Moderate seasonal flooding
F3 - Severe seasonal flooding

CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION	CODE	LIMITATION
1	El2	*11*	T2-E3	*21*	T2-El2-E3-Sh2-Rc3	*31*	T3-E3-Sh3-Rc2	*41*	T3-E3
2	El2-E2-Sh2-Rc3	*12*	T2-E3-Rc2	*22*	T2-El2-Rc2	*32*	T3-E3-Sh3-Rc3	*42*	T3-E3-Sh3-Rc3
3	El2-Sh2-Rc2	*13*	T2-E3-Rc3	*23*	T2-El2-Sh2-Rc2	*33*	T3-El2	*43*	T3-El2
4	F2-D2	*14*	T2-E3-Sh2-Rc2	*24*	T2-El2-Sh2-Rc3	*34*	T3-El2-E3-Rc2	*44*	T3-El2-E3
5	F2-Tc	*15*	T2-E3-Sh2-Rc3	*25*	T2-F2-D2	*35*	T3-El2-E3-Sh2-Rc3	*45*	T3-El2-E3-Rc3
6	F3-D2	*16*	T2-El2	*26*	T2-F3-D2	*36*	T3-El2-E3-Sh3-Rc2	*46*	T3-El2-E3-Sh3-Rc3
7	Sh2	*17*	T2-El2-E3	*27*	T3	*37*	T3-El2-E3-Sh3-Rc3	*47*	T3-El3
8	Sh2-Rc2	*18*	T2-El2-E3-Rc2	*28*	T3-E3	*38*	T3-F2-D2	*48*	Tc
9	T2	*19*	T2-El2-E3-Rc3	*29*	T3-E3-Rc2	*39*	T3-F3-D2		
10	T2-E2-Sh2-Rc2	*20*	T2-El2-E3-Sh2-Rc2	*30*	T3-E3-Sh2-Rc3	*40*	T3		

CODE	LANDUSE
4	Corn
81	Coffee
82	Cacao
116	Coconut
126	Grassland
134	Shrubs, unmanaged
136	Forest

CLIMATE TYPE

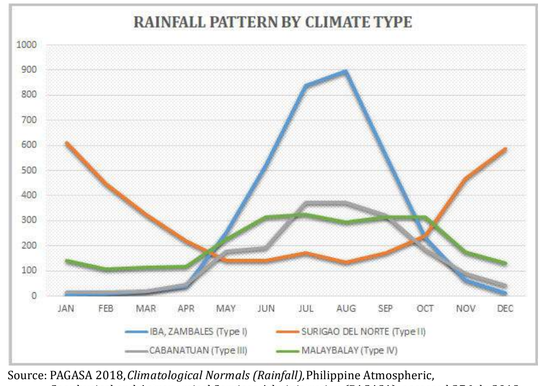
TYPE I : Two pronouced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September

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.

Surigao Del Sur is classified as climatic Type II.



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>.

LAND SUITABILITY MAP RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles

Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
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LEGEND

SUITABILITY CLASSES

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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
1 Land limitation
NS 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

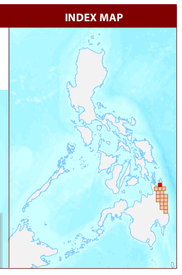
LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4120-II

4120-II
4119-I
4219-IV
4219-I

INDEX MAP



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Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas
Cacao
1 Land limitation
118 Land use

CONVENTIONAL SIGNS

ROADS
Expressway
Trunk line
Primary
Secondary
Tertiary

BOUNDARY
Region
Province
District
Municipality
Barangay

HYDROLOGY
Sea / Shoreline
Lakes / Rivers

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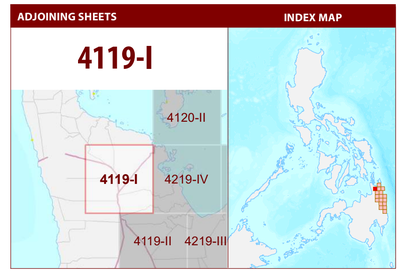

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Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas
Cacao
1 Land limitation
Land use

CONVENTIONAL SIGNS

ROADS
Expressway
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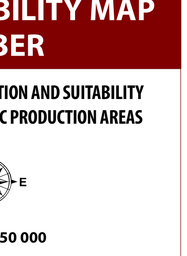

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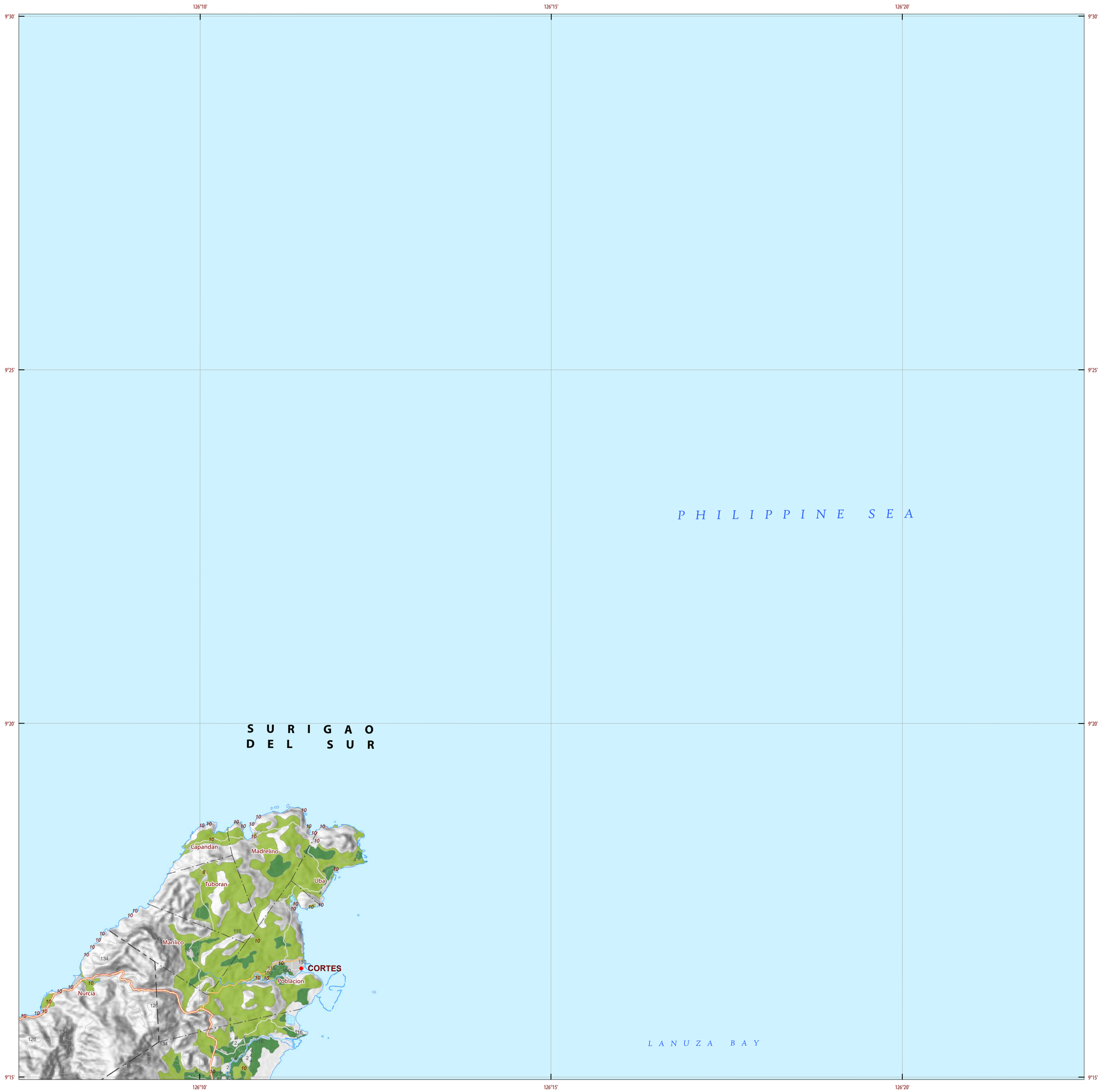

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LAND SUITABILITY MAP RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers

0 0.5 1 2 3
Miles

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
1 Land limitation
116 Land use

CONVENTIONAL SIGNS

ROADS
Expressway
Trunk line
Primary
Secondary
Tertiary

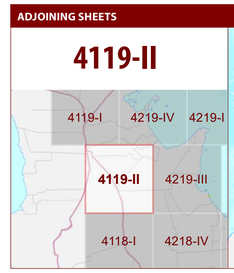
BOUNDARY
Region
Province
District
Municipality
Barangay

HYDROLOGY
Sea / Shoreline
Lakes / Rivers

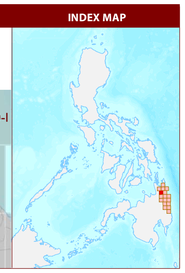
PLACES
Capital City / City
Capital Town / Town

LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS



INDEX MAP



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PROVINCE OF SURIGAO DEL SUR

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N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles

Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
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OTHER SIGNS

- NGP Areas
- Cacao
- 1 — Land limitation
- 116 — Land use

CONVENTIONAL SIGNS

ROADS
- Expressway
- Trunk line
- Primary
- Secondary
- Tertiary

BOUNDARY
- Region
- Province
- District
- Municipality
- Barangay

HYDROLOGY
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- Lakes / Rivers

PLACES
- Capital City / City
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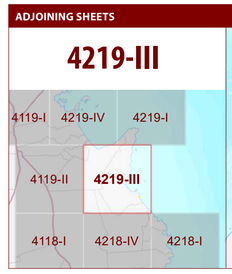
LAND USE
- Built-up
- Fishpond
- Mangrove

ADJOINING SHEETS



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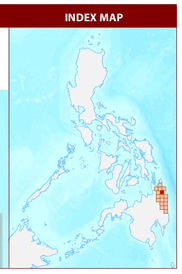

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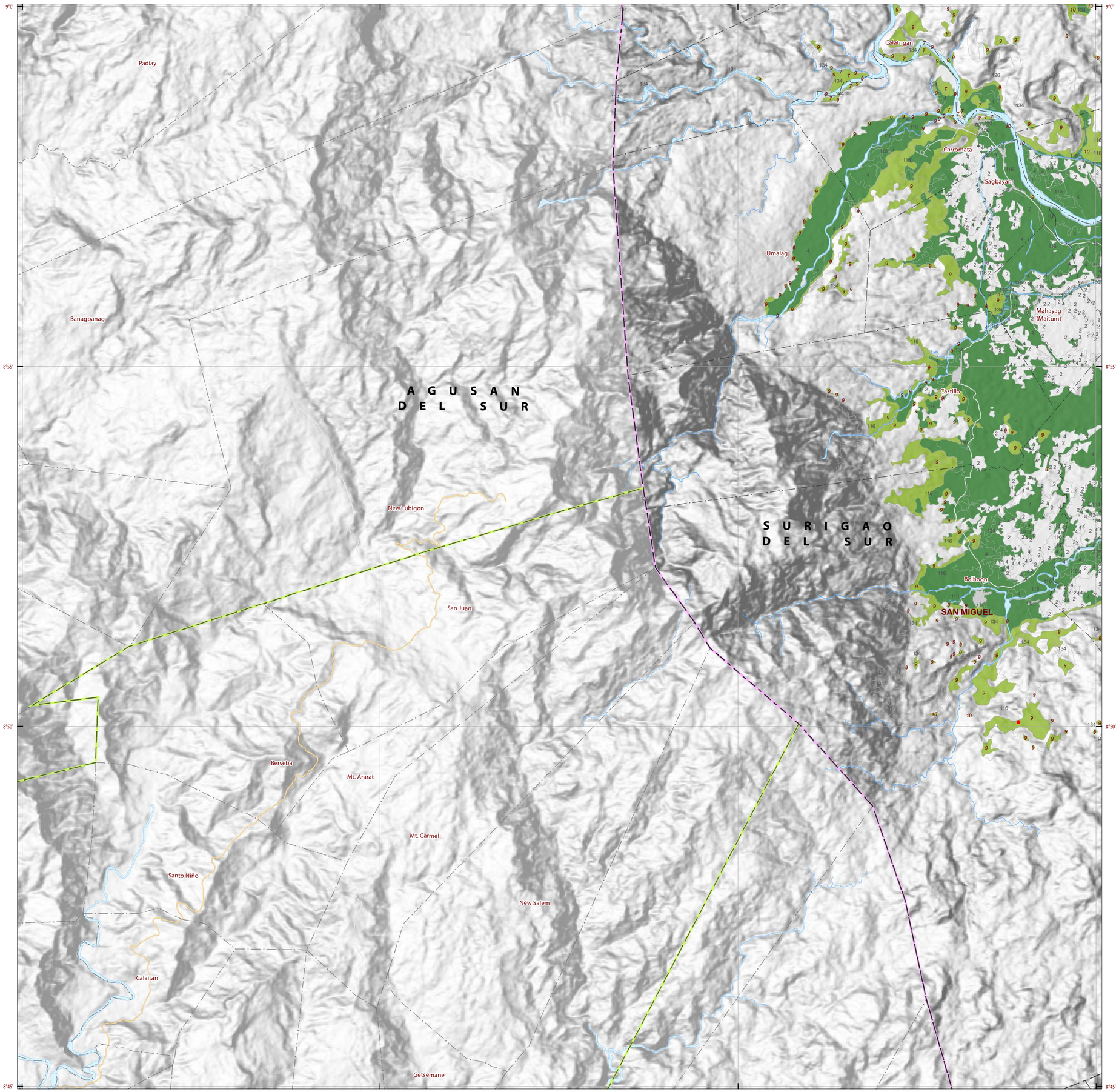

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Lakes / Rivers

PLACES
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Capital Town / Town

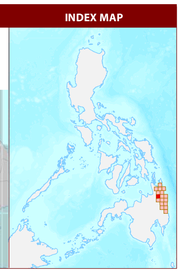
LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4118-I

4119-II | 4219-III
4118-I | 4218-IV
4118-II | 4218-III

INDEX MAP



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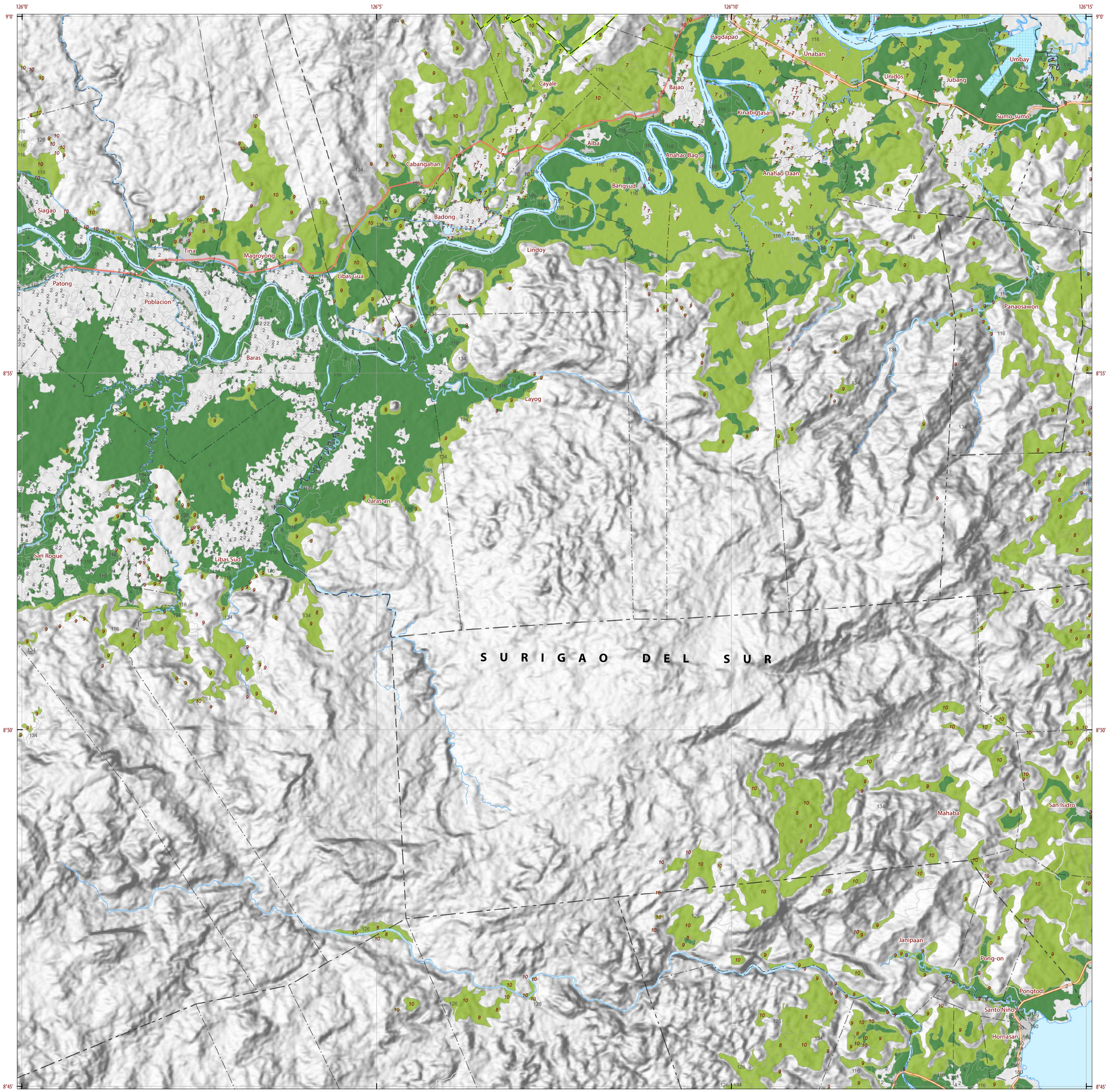

DEPARTMENT OF AGRICULTURE 1898
DEPARTMENT OF AGRICULTURE
DEPARTMENT OF AGRICULTURE 1898

LAND SUITABILITY MAP RUBBER

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SCALE 1 : 50 000

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OTHER SIGNS

- NGP Areas
- Cacao
- 1 / 116 — 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

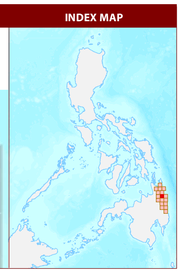
LAND USE
- Built-up
- Fishpond
- Mangrove

ADJOINING SHEETS

4218-IV

4119-II	4219-III	
4118-I	4218-IV	4218-I
4118-II	4218-III	4218-II

INDEX MAP



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LAND SUITABILITY MAP RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles

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LEGEND

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Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas
Cacao
1 Land limitation
116 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

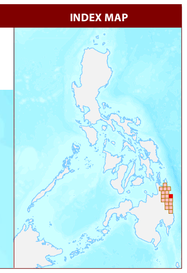
LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4218-I

4219-III
4218-IV
4218-I
4218-III
4218-II

INDEX MAP



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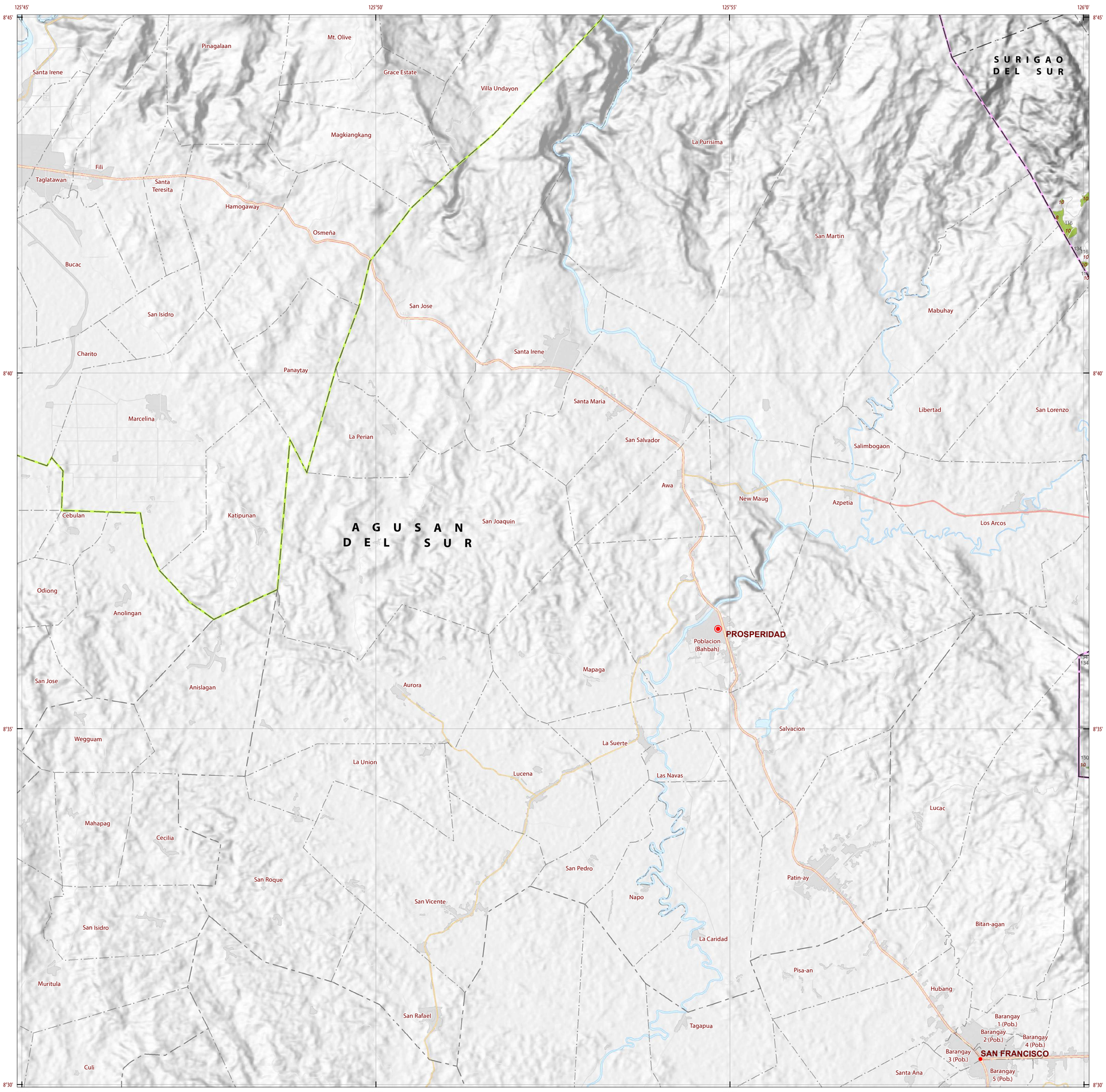

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CONVENTIONAL SIGNS

ROADS
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- Province
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HYDROLOGY
- Sea / Shoreline
- Lakes / Rivers

PLACES
- Capital City / City
- Capital Town / Town

LAND USE
- Built-up
- Fishpond
- Mangrove

ADJOINING SHEETS

4118-II

4118-I | 4218-IV
4118-II | 4218-III
4217-IV

INDEX MAP

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LAND USE
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ADJOINING SHEETS

4218-III

4118-I | 4218-IV | 4218-I
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4217-IV | 4217-I

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126°15'
126°20'
126°25'
126°30'
8°45'
8°40'
8°35'
8°30'

P H I L I P P I N E S E A

S U R I G A O
D E L S U R

Cabacungan
Cabacungan
Baculin
Harip

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Sea / Shoreline
Lakes / Rivers

PLACES
Capital City / City
Capital Town / Town

LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4218-II
4218-IV 4218-I
4218-III 4218-II
4217-IV 4217-I

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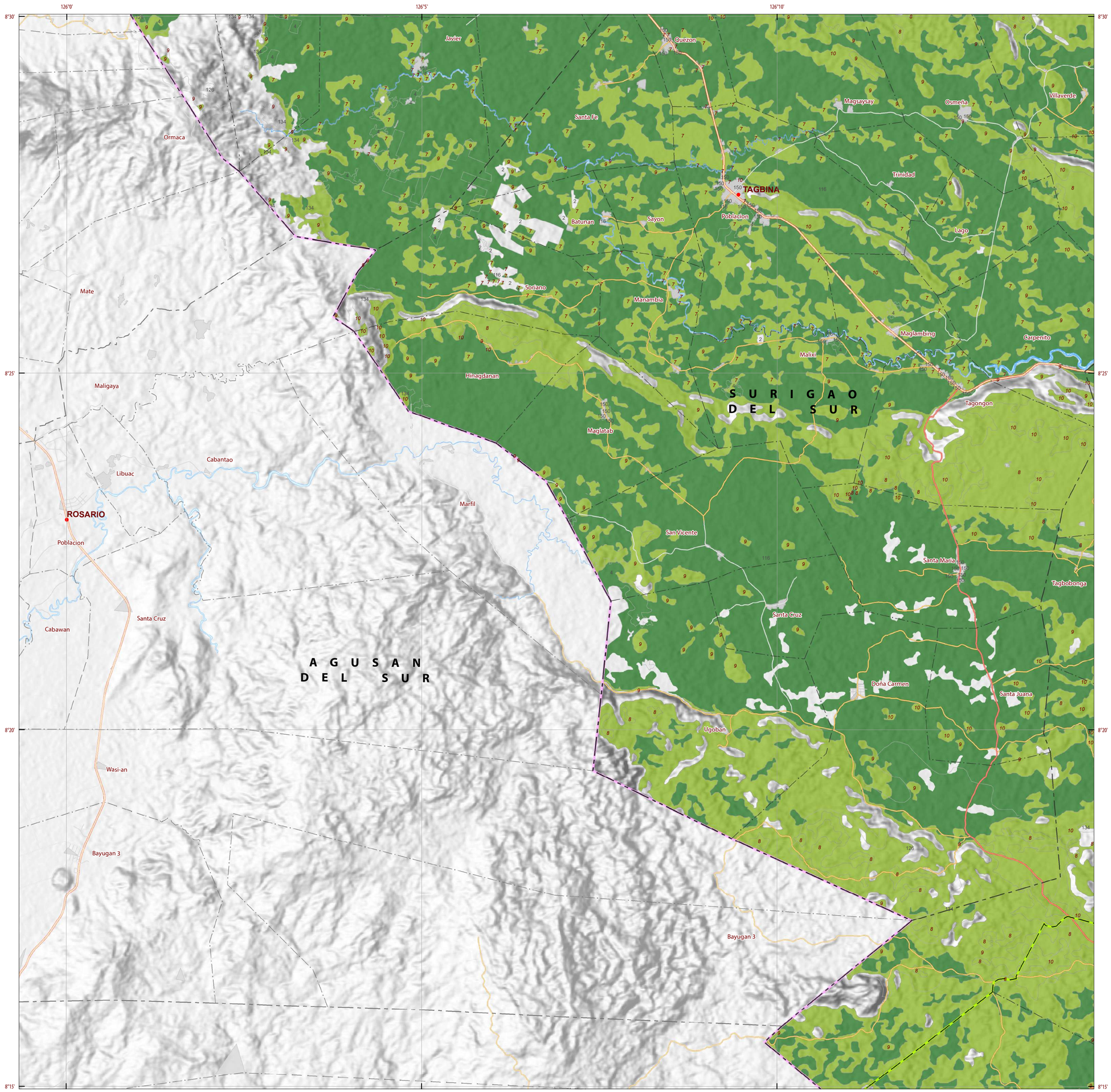

LAND SUITABILITY MAP RUBBER

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers

0 0.5 1 2 3
Miles

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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Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas
Cacao
1 Land limitation
118 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

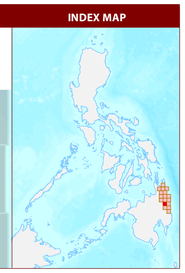
LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4217-IV

4118-II | 4218-III | 4218-II
4217-IV | 4217-I
4217-III | 4217-II

INDEX MAP



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N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers

0 0.5 1 2 3
Miles

Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
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Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas
Cacao
1 Land limitation
118 Land use

CONVENTIONAL SIGNS

ROADS
Expressway
Trunk line
Primary
Secondary
Tertiary

BOUNDARY
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Province
District
Municipality
Barangay

HYDROLOGY
Sea / Shoreline
Lakes / Rivers

PLACES
Capital City / City
Capital Town / Town

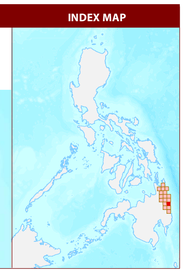
LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4217-I

4218-III | 4218-II
4217-IV | 4217-I
4217-III | 4217-II

INDEX MAP



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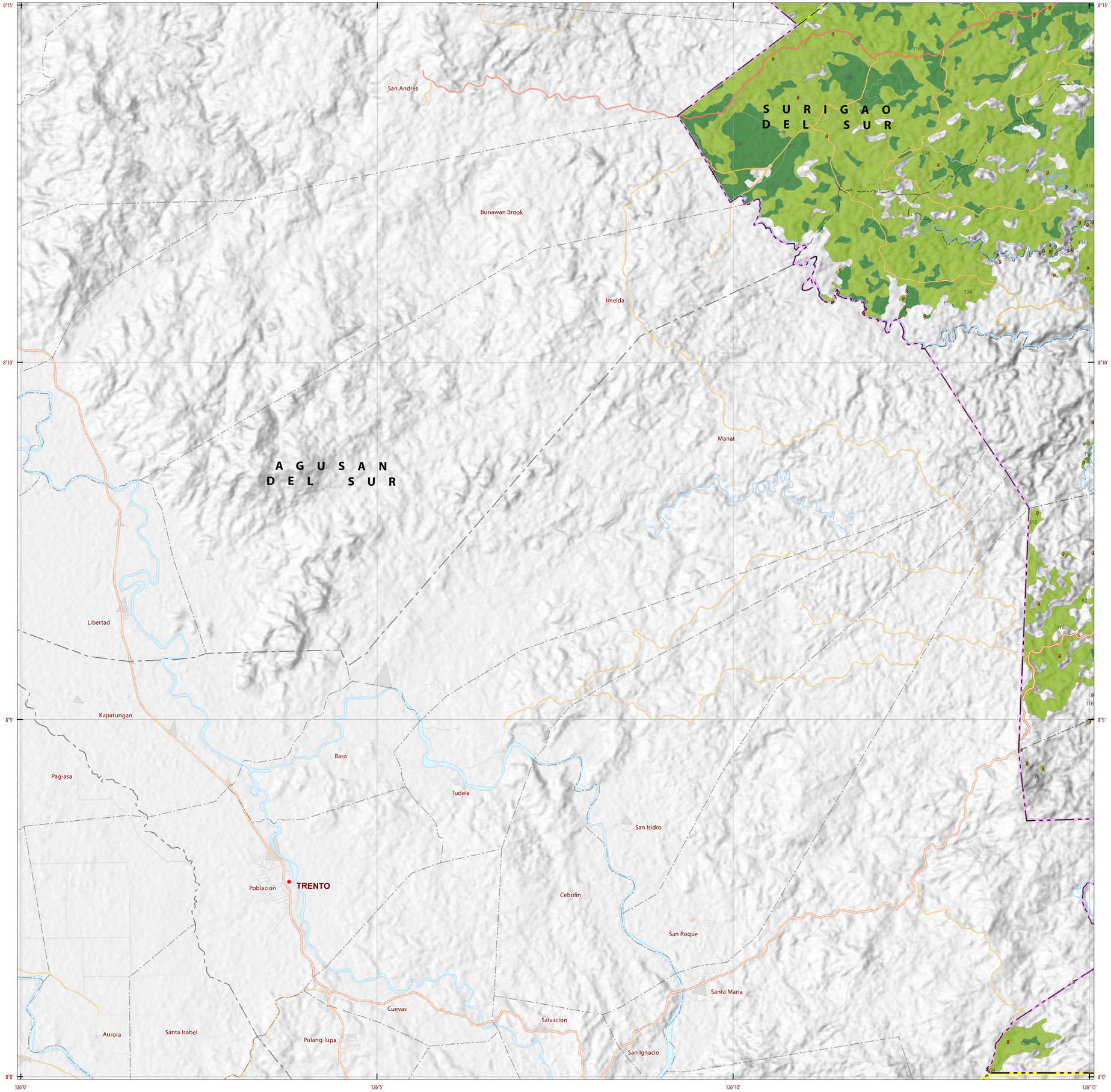

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LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
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Lakes / Rivers

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Capital Town / Town

LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4217-III

4217-IV 4217-I
4217-III 4217-II
4216-I

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4216-I

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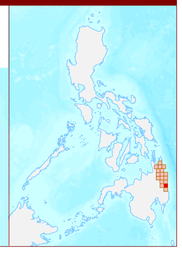

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126°15' 126°20' 126°25' 126°30'

8°0'

7°55'

7°50'

7°45'

Simulao
Caatihan
San Jose
Carmen
Cawayanan
Pagtila-an
Mansa-ilao
San Roque
Mandus
Palo Alto
BOSTON
Poblacion
Cabasagan
Sibajay
Mainit
Santa Filomena
Poblacion
CATEEL
San Rafael
Abijod
San Vicente
Baybay
Aragon
Maglahus

SURIGAO DEL SUR

DAVAO ORIENTAL

CATEEL BAY

PHILIPPINE SEA

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Secondary
Tertiary

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HYDROLOGY
Sea / Shoreline
Lakes / Rivers

PLACES
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Capital Town / Town

LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4216-I

4217-III 4217-II 4216-I

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