

## Analysis Of Residential Land Suitability In Palopo City

Wahyu Hidayat<sup>1\*</sup>, Ridwan Sukimin<sup>2</sup>, Suhardi M Anwar<sup>3</sup>

<sup>1</sup> Urban and Regional Planning Study Program, Faculty of Science and Technology, University of Muhammadiyah Palopo, Road. Jendral Sudirman Km. 3, Palopo City, South Sulawesi, 919126, Indonesia

<sup>2</sup> Marine Science Study Program, Faculty of Science and Technology, University of Muhammadiyah Palopo, Road. Jendral Sudirman Km. 3, Palopo City, South Sulawesi, 919126, Indonesia

<sup>3</sup> Master of Management Study Program, University of Muhammadiyah Palopo, Road. Jendral Sudirman Km. 3, Palopo City, South Sulawesi,

Corresponding Author Email: [wahyuhidayat@umpalopo.ac.id](mailto:wahyuhidayat@umpalopo.ac.id)

### Abstract

The selection of land for settlement really needs to be considered the physical condition of the region including topography, morphology, slopes, and soil type. There are many losses and casualties due to irregularities or unsuitability of land use that exceed its capacity. Therefore, a suitability analysis of settlement land is needed to determine the suitability of land to be used for settlement development. The purpose of this study is to examine the development of residential land in Palopo City and analyze the suitability of residential land designation in RTRW. The analysis method in this study uses the overlay method. The results obtained from this study are Land Suitability Based on Land Capability and Existing Built-up Land is predominantly Appropriate, with a presentation of 99.76% of the Existing Land Area of Built-up Land amounting to 1270.19. Land Suitability Based on Land Capability and Spatial Pattern in the Palopo City RTRW document, with categories In accordance with an area of 14342.85 ha, Not in accordance with an area of 13401.15 ha. Land Suitability Based and Land Capability and Spatial Patterns in the Palopo City RTRW document are dominated by Suitable, with a presentation of 51.7% of Palopo City's area of 27744.00 ha.

*Keywords: Land Capability; Settlement; Regional Spatial Plan; Palopo City*

### 1. Introduction

Settlement is one of the most important basic human needs, along with food and clothing. With the increasing population, the need for settlements also increases. The availability of land that can be used for settlement construction affects the needs of settlements. Its land designed for settlement must take into account the physical conditions of nature and the normative regulations in force. Physical environmental factors include slopes [1], soil type [2], rainfall [3], and disaster vulnerability [4]. There are many losses and casualties due to irregularities or unsuitability of land use that exceed its capacity. Therefore, an analysis that understands the rules for developing areas that do not violate land capabilities is needed, especially for residential areas.

Palopo is one of the cities in South Sulawesi Province that is visited by many city people because it has many businesses and facilities that promise job opportunities. The increasing amount of migration increases the demand for land for settlements and other purposes, resulting in shifting land use [5]. The development of disaster-prone cities is caused by irregular suburban settlement development, transformation of water parking areas into housing, land use shifts that are not supported by spatial land suitability databases.

Palopo City has a strategic role in regional development in South Sulawesi Province which positions Palopo City as a municipality in Luwu land. In carrying out development, one

of the problems faced by the Palopo City government, especially the Palopo City Housing and Settlement Office, has not provided a database and information that describes the distribution of settlement land suitability. This causes the implementation of development programs to be generally more political in nature without being based on a scientific study. Until now, there has been no research related to databases and maps of settlement land suitability in Palopo City. Therefore, this study will be the first research and has high novelty. The purpose of this study is to determine how large the area is suitable for residential land in Palopo City through mapping the suitability of settlement land based on geographic information systems.

## 2. Methodology

### a. Research Location

This research was conducted in Palopo City, South Sulawesi Province. Based on the 2022-2041 Regional Spatial Plan (RTRW) document, Palopo City has an area of 27,774 ha (including a reclamation area of 362 ha), the research location map is shown in figure 1. Palopo City is bordered by Walenrang District, Luwu Regency to the north and Bua District, Luwu Regency to the south. The western and eastern boundaries are Tondon Nanggala, North Toraja Regency and Teluk Bone Districts respectively. The area of Palopo City is recorded administratively Palopo City is divided into 9 districts and 48 subdistricts.

Wara Selatan District with an area of 1,310 ha consists of Binturu Subdistrict, Sampoddo Subdistrict, Songka Subdistrict, and Takkalala Subdistrict. Sendana District with an area of 4,430 ha consists of Purangi Subdistrict, Mawa Subdistrict, Peta Subdistrict, and Sendana Subdistrict. Wara District with an area of 442 ha consists of Amassangan Subdistrict, Boting Subdistrict, Tompotikka Subdistrict, Lagaligo Subdistrict, Dangerakko Subdistrict, and Pajalesang Subdistrict. Wara Timur District with an area of 760 ha consists of Benteng Subdistrict, Surutanga Subdistrict, Pontap Subdistrict, Malatunrung Subdistrict, Salekoe Subdistrict, Salotulue Subdistrict, and Pongjalae Subdistrict. Mungkajang District with an area of 3,678 ha consists of Mungkajang Subdistrict, Murante Subdistrict, Latuppa Subdistrict, and Kambo Subdistrict. Wara Utara District with an area of 603 ha consists of Batupasi Subdistrict, Penggoli Subdistrict, Sabbammaru Subdistrict, Luminda Subdistrict, Salobulo Subdistrict, and Pattene Subdistrict. Bara District with an area of 2,320 ha consists of Rampoang Subdistrict, Balandai Subdistrict, Temmalebba Subdistrict, To'bulung Subdistrict, and Buntu Datu Subdistrict. Telluwanua District with an area of 4,012 ha consists of Batu Walenrang Subdistrict, Mancani Subdistrict, Maroangin Subdistrict, Jaya Subdistrict, Salubattang Subdistrict, Sumarubu Subdistrict, and Pentojangan Subdistrict; dan Wara Barat District with an area of 10,189 ha consists of Battang Subdistrict, West Battang Subdistrict, Lebang Subdistrict, Padang Lambe Subdistrict, and Tomarunding Subdistrict.

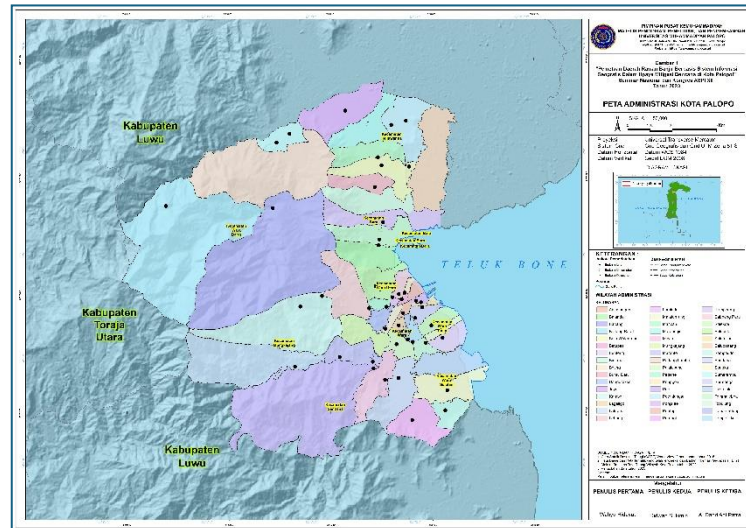


Figure 1. Palopo City Administration Map

b. Data Collection Methods

The purpose of the study, types / sources / methods of collection and methods of data analysis and expected output can be seen in Table 1.

Table 1. Stages of data collection, methods of data analysis and data analysis and *expected output*

Purpose	Stages of data collection		Data Analysis Methods	Analysis	Expected Output	
	Data Type	Data Sources	Data Analysis Tools			
Formulate a model of the level of land suitability in residential areas	<ul style="list-style-type: none"> <li>Topographic map</li> <li>Geomorphological map</li> <li>Climatological maps (rainfall, wind, and temperature);</li> <li>Population Density Spread Map</li> <li>Land cover map</li> <li>Disaster risk map</li> </ul>	<ul style="list-style-type: none"> <li>Public Works and Spatial Planning Office</li> <li>BMKG</li> <li>BAPPEDA</li> <li>BPS</li> <li>Regional Disaster Management Agency</li> </ul>	<ul style="list-style-type: none"> <li>Software ArcGIS 10.4</li> <li>Microsoft Office 10</li> <li>Hardware Laptop Asus No46V</li> <li>Digital Camera</li> <li>GNNs Mapping</li> <li>Drones</li> <li>Epson L3210 Printer</li> </ul>	<ul style="list-style-type: none"> <li>Laha's Abilities</li> <li>Land Suitability</li> <li>Overlay</li> </ul>	<ul style="list-style-type: none"> <li>Analysis of the carrying capacity of the land</li> </ul>	<ul style="list-style-type: none"> <li>Land capability maps and matrices</li> <li>Land suitability maps and matrices</li> </ul>

c. Analysis

Analysis of the Carrying Capacity of Land Based on Land Capacity Based on Land Capability. Land capability describes land that has high capacity will have more choice of use, whether for agriculture, forestry or other purposes. Generally, land with high capabilities is also good for non-agricultural purposes such as settlements, industry, infrastructure facilities, and others. Conversely, land that has low ability if forced to be used not according to its ability, then the land will be easily damaged, and can produce dangers that ultimately cause losses and even become disasters. The use of a land should be in accordance with the ability. To make good use of land, good planning is needed. Spatial planning is usually laid out in RTRW maps. Good spatial use planning is planning based on land carrying capacity [6].

Table 2 Classification of land capabilities in management units

Inhibiting Factors/ Limiting	Land Capability Class							
	I	II	III	IV	V	VI	VII	VIII
1. Soil texture (t)	t <sub>2</sub> /t <sub>3</sub>	t <sub>1</sub> /t <sub>4</sub>	t <sub>1</sub> /t <sub>4</sub>	(*)	(*)	(*)	(*)	t <sub>5</sub>
2. Surface Slope (%)	l <sub>0</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	(*)	l <sub>4</sub>	l <sub>5</sub>	L <sub>6</sub>
3. Drainase	d <sub>0</sub> /d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	(**)	(*)	(*)	(*)
4. Effective depth	k <sub>0</sub>	k <sub>0</sub>	k <sub>1</sub>	k <sub>2</sub>	(*)	K <sub>3</sub>	(*)	(*)
5. The state of erosion	e <sub>0</sub>	e <sub>1</sub>	e <sub>1</sub>	e <sub>2</sub>	(*)	e <sub>3</sub>	e <sub>4</sub>	(*)
6. Pebbles/rocks	b <sub>0</sub>	b <sub>0</sub>	b <sub>0</sub>	b <sub>1</sub>	b <sub>2</sub>	(+)	(+)	b <sub>3</sub>
7. Permeability	p <sub>2</sub> ,p <sub>3</sub>	p <sub>2</sub> ,p <sub>3</sub>	p <sub>2</sub> ,p <sub>3</sub> ,p <sub>4</sub>	p <sub>2</sub> ,p <sub>3</sub> ,p <sub>4</sub>	p <sub>1</sub>	(*)	(*)	p <sub>5</sub>
8. Flood Vulnerability	o <sub>0</sub>	o <sub>1</sub>	o <sub>2</sub>	o <sub>3</sub>	o <sub>4</sub>	(+)	(+)	(+)
9. Avalanche Vulnerability	L <sub>0</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	(+)	(+)	(+)

Source: [7] with author modification, 2024

Classification of Inhibiting / Limiting Factors :

1. Texture Tanah

Table 3. Soil Textur Classification

Symbol	Soil Texture	Information
t1	soft	Dusty clay, Clay
t2	It's a bit smooth	Sandy clay, dusty clay, clay sloping, sandy clay sand
t3	Keep	Dust, lempung berdebu, lempung
t4	It's a bit rough	Sandy shells
t5	The State	Sand sloping, sand

2. Lereng Permukaan (%)

Table 4. Surface Slope Classification

Symbol	Slope	Information
l0	0-3%	Flat
l1	3-8%	Plants/Berombas
l2	8-15%	Slightly Oblique/Wavy
l3	15-30%	Sloping / Hilly
l4	30-45%	A Bit Steep
l5	45-65%	Steep
l6	>65%	Very Steep

### 3. Soil drainage

Table 5. Soil drainage classification

Symbol	Soil drainage	Information
d0	Good	the soil has good air circulation. The entire soil profile from the top to the light-coloured undercoat is uniform and there are no rickshaws
d1	Rather good	the soil has good air circulation. Not available rickshaws are yellow, brown, or gray on the top layer and on the top of the bottom layer.
d2	It's a bit bad	the upper soil layer has good air circulation; There are no yellow, brown, or gray rickshaws. The rickshaws are found in the entire lower layer
d3	Buruk	part or top layer (near the surface there are gray, brown, and yellowish colors or rickshaws).
d4	Very bad	Sand sloping, sand

### 4. Effective Depth

Table 6. Effective Depth Classification

Symbol	Effective Depth	Information
K0	Deep	No erosion
K1	Keep	<25% the top layer is missing
K2	Shallow	25-75% the top layer is missing
K3	Very shallow	>75% the top layer is missing, until < 25% the bottom layer is missing
K4	Very Heavy	>25% Bottom layer is missing

### 5. Erosion State

Table 7. Classification of erosion states

Symbol	Erosion Depth	Information
e0	No erosion	No erosion
e1	Light	<25% the top layer is missing
e2	Sedang	25-75% the top layer is missing
e3	Berat	>75% the top layer is missing, until < 25% the bottom layer is missing
e4	Sangat Berat	>25% Bottom layer is missing

### 6. Rock

Table 8. Rock Classification

Simbol	Rock	Information
b0	None or little	0-15% volume soil
b1	Keep	15-5% volume soil; tillage Starting is rather difficult and plant growth is somewhat disturbed
b2	Many	50-90% soil volume; tillage sangat sulit dan Impaired plant growth
b3	Sangat Banyak	>90% soil volume; tillage is not mungkin carried out and plant growth is disturbed

7. Soil Permeability

Table 9. Classification of Flood Vulnerability

Symbol	Flood Vulnerability	Information
p1	Slow	:<0.5cm/jam
p2	A bit slow	0.5-2.0m/jam
p3	Keep	2.0-6.25cm/jam
p4	A bit fast	:6.25-12.5cm.jam
p5	Fast	:>12.5cm/jam

8. Flood Vulnerability

Table 10. Classification of Flood Vulnerability

Symbol	Flood Vulnerability	Interval level Flood Vulnerability Analysis Results
O0	Safe	<1.78
O1	Safe Enough	1.79-2.36
O2	Prone	2.37-2.94
O3	Quite Prone	2.95-3.52
O4	Very Prone	>3.53

9. Avalanche Vulnerability

Table 11. Classification Avalanche vulnerability

Symbol	Avalanche Vulnerability	Interval level Landslide Vulnerability Analysis Results
L0	Safe	<1.70
L1	Safe Enough	1.71-2.2
L2	Prone	2.21-2.7
L3	Quite Prone	2.71-3.2
L4	Very Prone	>3.21

Kelas Kemampuan Lahan	Intensitas dan pilihan penggunaan meningkat								
	Cagar alam/hutan lindung	Hutan produksi terbatas	Penggembalaan terbatas	Penggembalaan sedang	Penggembalaan intensif	Garapan terbatas	Garapan sedang	Garapan intensif	Garapan sangat intensif
Hambatan/ancaman meningkat Kesesuaian dan pilihan penggunaan berkurang	I								
	II								
	III								
	IV								
	V								
	VI								
	VII								
	VIII								

Figure 3. The relationship between land capability classes and intensity, Source: [7]

Table 12. Classification of land capabilities in management units

Class	Criterion	Dominant use
I	No / little obstacle. Suitable for all uses, especially agriculture. Characteristics: flat topography, small erosion, deep effective depth, good drainage, easy to cultivate, good water-holding capacity, fertile, not threatened by flooding.	Especially agriculture
II	Multiple barriers/threats of damage, reduced choice of use, requires moderate conservation.	Farming of annuals, pastures, production forests.
III	Some weight barriers, reduced choice of use, require special conservation.	Farming of annuals, requiring tillage, pastures, production forests, non-agricultural uses (settlements, etc.)
IV	Barriers are greater, the choice of plants is limited. Need careful management and more difficult conservation.	Manageable agriculture, grass, production forest, grazing, non-agricultural use
V	It is not threatened by erosion, but has other obstacles that are not easily removed, thus limiting the choice of use. This land is usually located on flat-almost flat topography but is often hit by floods, rocky or unsuitable climates.	- Grassland crops, production forests, protected forests and nature reserves. - Non-agricultural use
VI	These lands have some barriers or threats of damage that reduce their choice of use or require moderate conservation measures. Management needs to be careful including conservation measures to prevent damage.	- Grass crops, pastures, production forests, protected forests and nature reserves - Non-agricultural use
VII	This land has severe obstacles and threats that cannot be removed, therefore its use must be conservation. If used for pastures or production forests, heavy erosion prevention should be carried out.	Pastures and production forests
VIII	This land is best left naturally. Barriers and threats are very heavy and conservation measures are impossible, so they need to be protected.	Forest reserves, nature recreation and nature reserves

Source: [7] with author modification, 2024

### 3. Result and Discussion

#### 3.1. Results of Palopo City Inhibiting Factor / Boundary Classification

##### 1. Texture Tanah

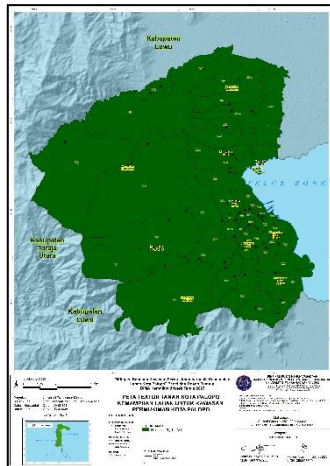


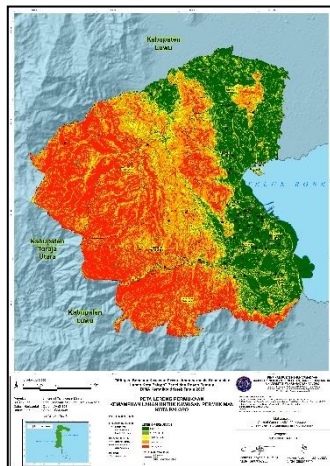
Figure 4. Textur Land Palopo City

Table 13. Soil Textur Classification

Symbol	Soil Texture	Land Capability Class	Broad (ha)	%
t1	soft	I - VII	27744	100

Source : Author Data Processing, 2024

##### 2. Surface Slope



Source : Author Data Processing, 2024

Figure 5. Surface Slope Palopo City

Table 14. Surface Slope

Symbol	Surface Slope	Land Capability Class	Broad (ha)	%
10	0-8 %	I	6452.99	23.25
12	8-15 %	III	2715.70	9.78
13	15-25 %	IV	2822.86	10.17
14	25-45 %	VI	6972.80	25.13
15	>45 %	VII	8779.64	31.64
Total			27744	100

##### 3. Drainase Tanah

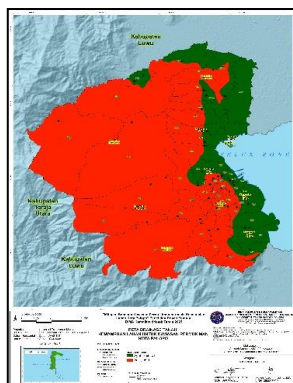


Figure 6. Textur Land Palopo City

Table 15. Soil drainage

Symbol	Soil drainage	Land Capability Class	Broad (ha)	%
d0	Baik	I	21919.46	79.00
d1	Agak Baik	II	5824.54	21.00
Total			27744	100

Source : Author Data Processing, 2024

4. Effective Depth

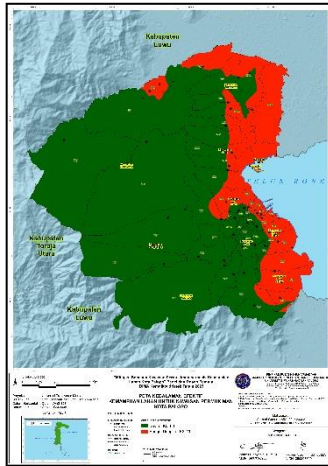


Table 16. Effective Depth

Simbol	Effective Depth	Land Capability Class	Broad (ha)	%
K0	Deep	I-II	21919.46	79.00
K3	Very shallow	II	5824.54	21.00
Total			27744	100

Source : Author Data Processing, 2024

Figure 7. Effective Depth of Palopo City

5. Erosion State

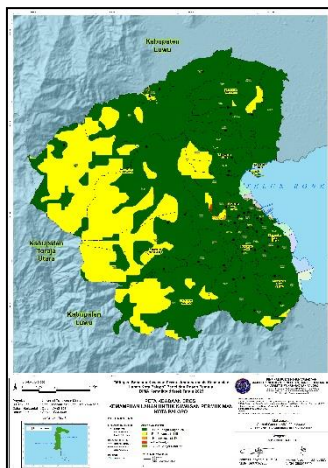


Table 17. Erosion State

Symbol	Buy	Land Capability Class	Broad (ha)	%
e0	0 – SR = Very Light	I	20204.46	72.82
e1	I – R = Light	II-III	7509.61	9.78
e2	II–R= Keep	IV	15.81	0.005
e3	III – B = Heavy	VI	14.02	0.005
15	IV – SB = Very Heavy	VII	0.08	0.0003
Total			27744	100

Source : Author Data Processing, 2024

Figure 8. Erosion State of Palopo City

6. Rock

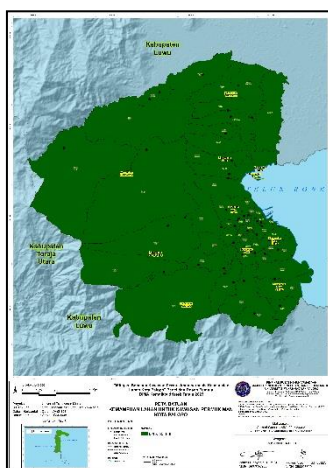


Table 18. Rock Classification

Symbol	Rock	Land Capability Class	Broad (ha)	%
b0	0-15	I-III	27744	100

Source : Author Data Processing, 2024

Figure 9. Rock of Palopo City

7. Permeability

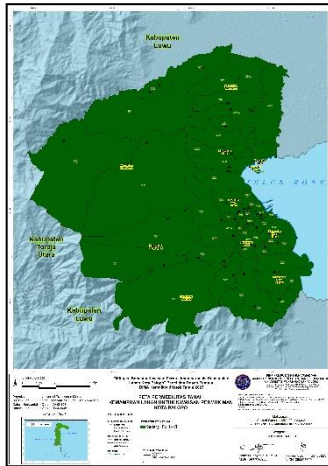


Table 19. Soil Permeability

Simbol	Soil Permeability	Land Capability Class	Broad (ha)	%
p3	Keep	I - VII	27744	100

Source : Author Data Processing, 2024

Figure 10. Permeabilitas Tanah of Palopo City

8. Flood Vulnerability

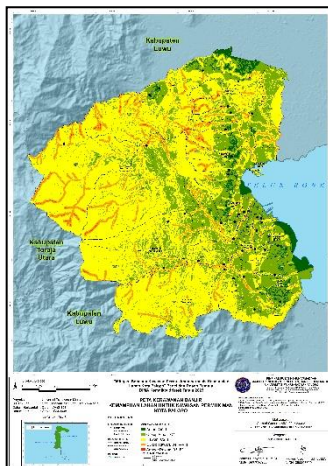


Table 20. Flood Vulnerability

Simbol	Flood Virginity	Land Capability Class	Broad (ha)	%
O0	Safe	I	924.03	3.3
O1	Safe Enough	II	7864.23	28.34
O2	Prone	III	16725.33	60.28
O3	Quite Prone	IV	2158.49	7.78
O4	Very Prone	V-VIII	71.91	0.25
Total			27744	100

Source : Author Data Processing, 2024

Figure 11. Flood Vulnerability of Palopo City

9. Avalanche Vulnerability

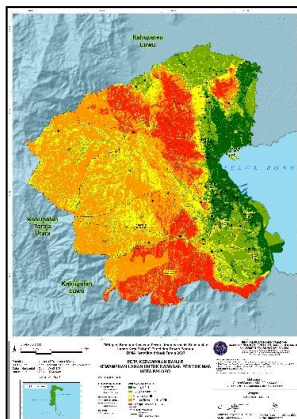


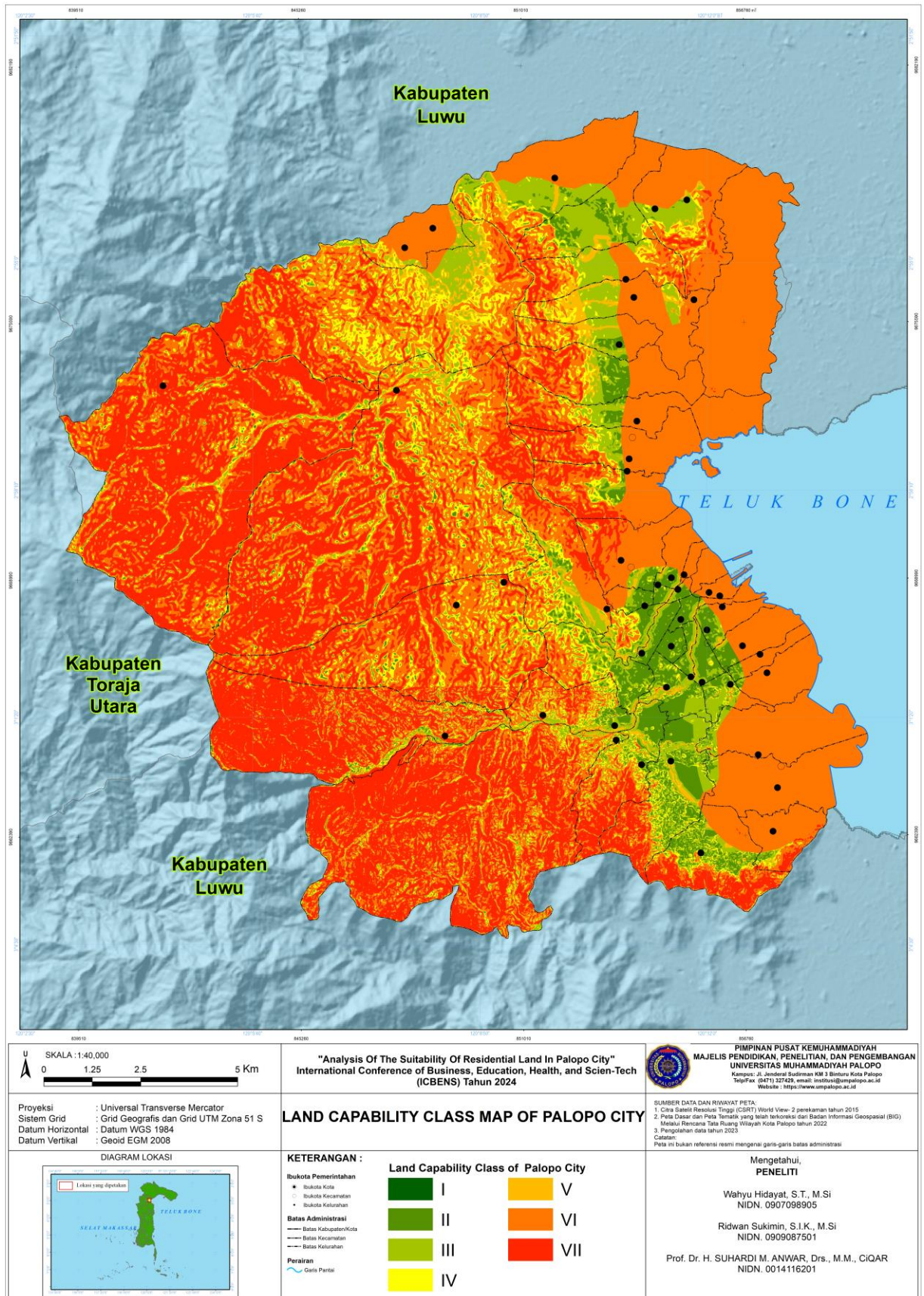
Table 21. Avalanche Vulnerability

Symbol	Avalanche	Land Capability Class	Broad (ha)	%
L0	Safe	I	924.03	13.10
L1	Safe Enough	II	7864.23	16.52
L2	Prone	III	1625.33	18.87
L3	Quite Prone	IV	2158.49	16.85
L4	Very Prone	V-VIII	71.91	37.47
Total			27744	100

Source : Author Data Processing, 2024

Figure 12. Flood Vulnerability of Palopo City

### 10. Land Capability Class Map of Palopo City



Source : Author Data Processing, 2024

Figure 13. Land Capability Class Map of Palopo City

Table 22. Palopo City's Land Capabilities

Class	Inhibiting Factors	Land Capability	Land Suitability	Broad ha	Broad %
I	None	S2	Appropriate	0.32	0.001
I	None	S2	Appropriate	6.14	0.022
II(e1)	Mild erosion	S2	Appropriate	0.23	0.001
II(L2)	Landslides	S3	Appropriate	30.44	0.110
II(L2,e1)	Landslides and Light Erosion	S3	Appropriate	0.79	0.003
II(O1)	Flooding is Safe Enough	S3	Appropriate	289.94	1.045
II(O1,e1)	Flooding and erosion	S3	Appropriate	4.03	0.015
II(O1,L1)	Floods And Landslides	S3	Appropriate	991.56	3.574
III(i2)	slope	S1	Appropriate	2.40	0.009
III(I2)	slope	S1	Appropriate	0.10	0.000
III(I2,e1)	slopes and Mild erosion	S1	Appropriate	0.05	0.000
III(L2)	slope	S3	Appropriate	846.29	3.050
III(O2)	flood	S3	Appropriate	656.37	2.366
III(O2, l2)	floods and slopes	S3	Appropriate	143.13	0.516
III(O2,e1)	flooding and Mild erosion	S3	Appropriate	4.28	0.015
III(O2,e1,l2)	flooding, erosion and slopes	S3	Appropriate	12.73	0.046
III(O2,L2)	floods and landslides	S3	Appropriate	619.02	2.231
IV(I3)	slope	S1	Appropriate	1002.96	3.615
IV(I3,L3)	slopes and avalanches	S3	Appropriate	14.96	0.054
IV(I3,L4)	slopes and avalanches	S3	Appropriate	1184.60	4.270
IV(L3)	avalanche	S3	Appropriate	2.69	0.010
IV(o3)	flood	S3	Appropriate	2.18	0.008
IV(o3,I3)	Floods And Landslides	S3	Appropriate	5.16	0.019
V(L4)	avalanche	S3	Appropriate	252.46	0.910
V(O4)	flood	S3	Appropriate	296.22	1.068
V(O4)	Floods And Landslides	S3	Appropriate	169.21	0.610
V(O4,L4)	Floods And Landslides	S3	Appropriate	2.27	0.008
VI(I4)	slope	S1	Appropriate	6722.91	24.232
VI(K3)	depth	S1	Appropriate	5723.14	20.628
VII(e4)	Erosion	N1	Not Compliant	0.09	0.000
VII(I5)	slope	N2	Not Compliant	8757.35	31.565
Total				27744.00	100

Source : Author Data Processing, 2024

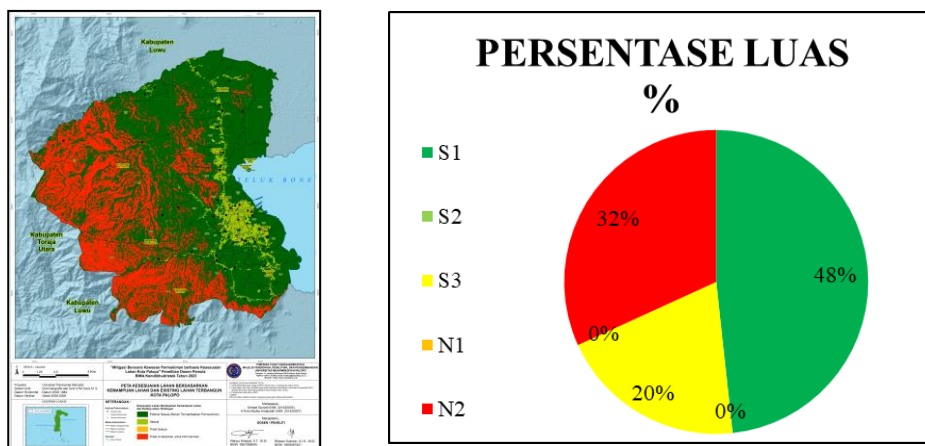
In Table 22 and Figure 13 Palopo City's land capability classes are divided into 5 classes with categories S1 with an area of 13391.80 ha, S2 with an area of 6.70 ha, S3 with an area of 5519.06 ha, N1 with an area of 0.09 ha and N2 with an area of 8826.35 ha. Land Capability in Palopo City is dominated by S1, with a presentation of 48.27% of Palopo City's area of 27744.00 ha. Based on the distribution of Land Capability, the eastern, northeastern and southeastern regions of the study have land capabilities in the S1 category. This is because the area is on a flat slope.

### 3.2. Suitability of Residential Land

#### 3.2.1 Land suitability for residential areas based on the results of Palopo City land capability analysis

Table 23. Suitability of Residential Land Based on the Results of Palopo City Land Capability Analysis

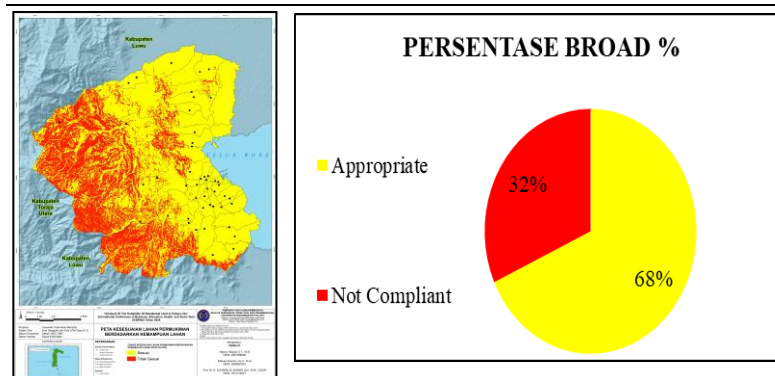
Information	Broad (ha)	%
S1	13391.80	48.27
S2	6.70	0.02
S3	5519.06	19.89
N1	0.09	0.00
N2	8826.35	31.81
Total	27744.00	100



Source : Author Data Processing, 2024  
 Figure 14. Suitability of Residential Land

Table 24. Suitability of Residential Land Based on the Results of Palopo City Land Capability Analysis

Information	Broad (ha)	%
Appropriate	18917.56	68.19
Not Compliant	8826.44	31.81
Total	27744.00	100

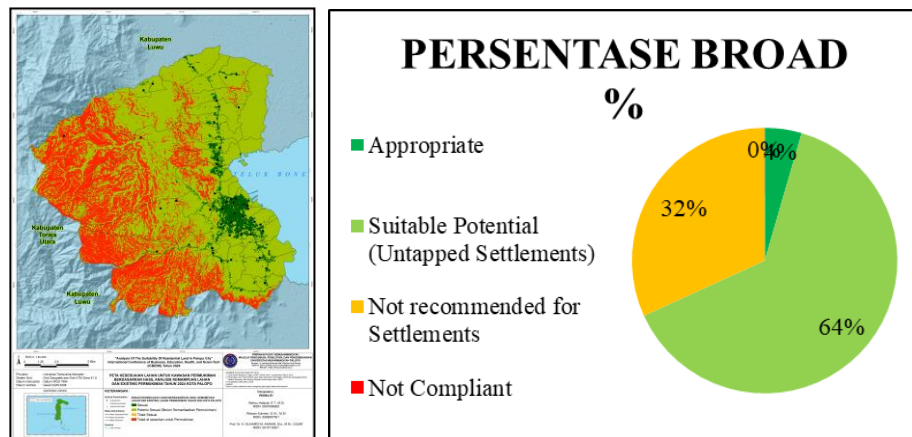


Source : Author Data Processing, 2024  
 Figure 15. Suitability of Residential Land

### 3.2.2 Land suitability for residential areas based on analysis results Land Capability and Existing Settlements in 2024 Palopo City

Table 23. Suitability of Settlement Land Based on the Results of Land Capability Analysis and Existing Settlements of Palopo City

Information	Broad (ha)	%
Appropriate	1247.65	4.50
Suitable Potential (Untapped Settlements)	17669.91	63.69
Not recommended for Settlements	8823.43	31.80
Not Compliant	3.01	0.01
Total	27744.00	100



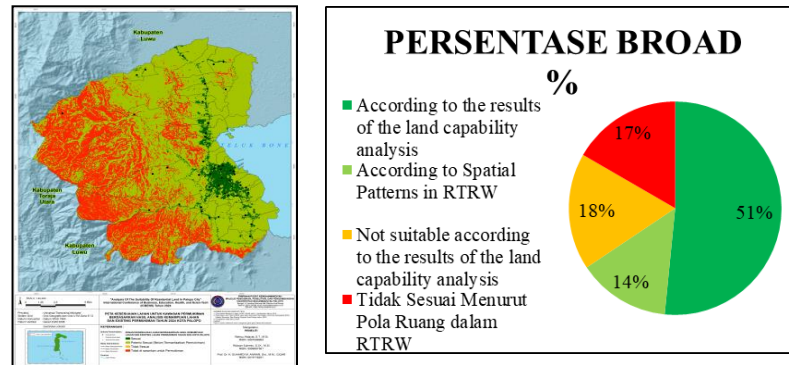
Source : Author Data Processing, 2024

Figure 16. Suitability of Residential Land

### 3.2.3 Land suitability for residential areas based on the results of land capability analysis and spatial patterns of RTRW Palopo City

Table 24. Suitability of Residential Land Based on the Results of Land Capability Analysis and Spatial Pattern of RTRW Palopo City

Information	Broad (ha)	%
According to the results of the land capability analysis	14342.85	51.59
According to Spatial Patterns in RTRW	3906.48	14.05
Not suitable according to the results of the land capability analysis	4919.96	17.70
Tidak Sesuai Menurut Pola Ruang dalam RTRW	4634.33	16.67
Total	27803.63	100



Source : Author Data Processing, 2024  
 Figure 17. Suitability of Residential Land

### 3.3. Discussion

Palopo City's land capability class is divided into 5 classes with the S1 category with an area of 13391.80 ha, S2 with an area of 6.70 ha, S3 with an area of 5519.06 ha, N1 with an area of 0.09 ha and N2 with an area of 8826.35 ha. Land Capability in Palopo City is dominated by S1, with a presentation of 48.27% of Palopo City's area of 27744.00 ha. Based on the distribution of Land Capability, the eastern, northeastern and southeastern regions of the study have land capabilities in the S1 category. This is because the area is on a flat slope.

Suitability of residential land based on the land capability of Palopo city, with categories In accordance with an area of 18917.56 ha, Not in accordance with an area of 8826.44 ha,. Land Suitability Based on Land Capability in Palopo City is dominated by Suitable, with a presentation of 68.19% of Palopo City's area of 27744.00 ha. The existing area of Palopo City Built-up Land has an area of 1270.19 ha or 4.58% of the area of Palopo City of 27744.00 ha. Land Suitability Based on Land Capability and Existing Land Built Palopo City, with categories In accordance with an area of 1267.18 ha, Not in accordance with an area of 3.01 ha,. Land Suitability Based on Land Capability and Existing Built-up Land in Palopo City is dominated by Appropriate, with a presentation of 99.76% of the Existing Land Built-up Land area of 1270.19 ha or 4.57% of Palopo City area of 27744.00 ha.

Land Suitability Based on Land Capability and Spatial Pattern in the Palopo City RTRW document, with categories In accordance with an area of 14342.85 ha, Not in accordance with an area of 13401.15 ha,. Land Suitability Based and Land Capability and Spatial Patterns in the Palopo City RTRW document are dominated by Suitable, with a presentation of 51.7% of Palopo City's area of 27744.00 ha.

### 4. Conclusion

Suitability of Settlement Land Based on Existing, Land Capability and Spatial Pattern in the Palopo City RTRW document is dominated by Suitability.

### 5. Acknowledgement

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