International Journal of Built Environment and Scientific Research Volume 08 Number 01 | June 2024
e-issn: 2580-2607 | p-issn: 2581-1347 | Pg. 63-80

Rejuvenation of Coastal Area in Selumit Pantai Village Tarakan City

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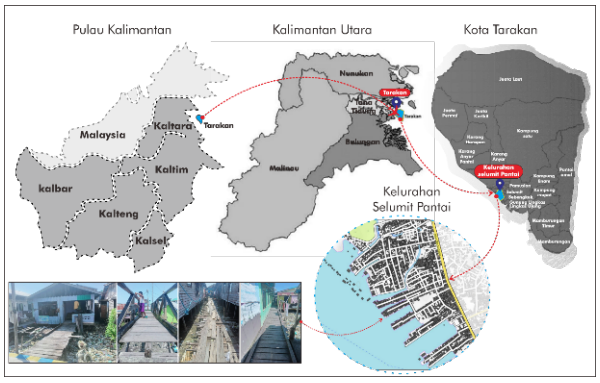
ABSTRACT

Tarakan City, as the only city in North Kalimantan, has a coastal settlement in urban Village Selumit Pantai. According to the RP2KPKP Study, this area is experiencing slum problems due to environmental degradation and lack of basic infrastructure. To address this, a study was conducted to identify slum levels and formulate appropriate rejuvenation strategies. By conducting rejuvenation, the condition of slum-affected neighborhoods can be improved, providing a positive impact on residents and the surrounding environment. This research used quantitative methods with seven slum indicators and consideration of population and socio-economic conditions. The results showed all blocks as severe slums, so priority Urban Renewal strategies were applied to reduce slum levels. The research findings confirmed that the coastal area faced severe slum levels, due to building density, environmental degradation, and lack of adequate infrastructure. The Regeneration Strategy implemented aims to improve and renew degraded areas, taking into account aspects of economic growth and environmental conservation. These efforts, such as improving infrastructure and environmental quality, are expected to reduce slum levels in the area, improve community welfare, and maintain the sustainability of the coastal environment, creating a better environment for its residents.

Keywords: Tarakan City, coastal, Slum, Area rejuvenation, Regeneration strategy

1. Introduction

Tarakan City is the only city in North Kalimantan Province that functions as an urban scale activity center. This area has been designated as a Regional Activity Center (PKW) both in the Spatial and Regional Plan (RTRW) of North Kalimantan Province and the City RTRW. This urban area has an important role as a node of export-import activities that support the National Activity Center (PKN). [1] The city has a Coastal Area that should be preserved, maintained, and freed from slum areas, but in reality almost the entire coastal area of the city has grown into a dense and slum residential area. The growth of coastal slums began with the rapid development of fishing villages. Over time, the development and growth of the population in fishing villages has caused the coastal area to develop unorganized and uncontrolled into a slum area. [2]



Source: (Author, 2023)
Figure 1: Research study location

Selumit Pantai, one of the coastal areas in the city center, is rich in natural potential and has a deep heritage of fishing culture. However, like fishing settlements in many places around the world, it also faces serious challenges related to the slum phenomenon that degrades environmental quality. [3] Therefore, the

rejuvenation strategy of slum fishermen settlements in the Selumit Pantai Coastal Area is an urgent need to improve environmental quality and strengthen the survival of local residents, possessing valuable natural resources, rich cultural heritage, and deep meaning. [1]

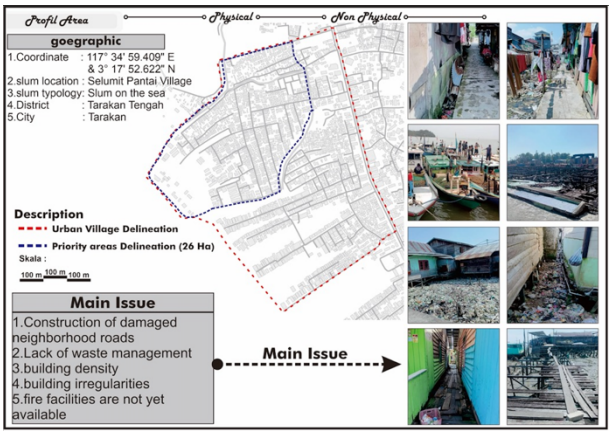
Based on the RP2KPKP study conducted in 2022, it was found that the slum areas in Tarakan City, particularly in Selumit Pantai Village, are situated at the heart of the city. The table below presents data on various coastal settlements and their associated issues:

Table 1: Coastal Slums

coastal settlements	Problem
1.Selumit Pantai	1. Slum settlements are characterized by a decline in environmental quality and minimal basic infrastructure. 2. There are indications of violations of spatial planning, coastal zoning, and riverbanks. 3. Prone to disasters such as floods, landslides, and fires. 4. Land disputes occur in areas of former fires, Naval Base, and Cultural Heritage sites.
2. Karang Anyar Pantai	
3. Karang Rejo	
4. Lingkas Ujung	
5. Juata Laut	
6. Pantai Amal	
7. Binalatung	

Source: (PKP Tarakan City, 2022)

As the problems shown in the table above show, the slum phenomenon does occur in these locations in several areas.



Source: (Tarakan City Government, 2022)
Figure 2: Slum Area Profile

Based on the Tarakan City Government's slum profile, there are several main problems, including building density, building irregularities, environmental road damage, waste accumulation, and lack of fire facilities and infrastructure. The impact of these conditions is a decline in the environmental, economic and social quality of the area, which has an impact on the decline in the quality of life of coastal communities in Selumit Pantai Village, Tarakan City. However, this area also has potential that can be developed, such as a dock, its location in the city center, the edge of the sea, economic and business areas, mangrove forests, and rich culture and heritage. [1]

Community empowerment in this village focuses on socioeconomics, the majority of the population are fishermen with an average education level of elementary school graduates, with income obtained from fishing in the sea and ponds. [4] Therefore, in dealing with slum problems both physical and non-physical, it is important to assess the slum level of this area which requires appropriate handling. This needs to be resolved immediately with an appropriate resolution strategy. Some slum resolution theories are outlined in the following data table:

Table 2: Coastal Slums

Teori	Lokus Strategi
1. Urban Renewal (Mutlu 2009 dalam Letfiani, 2017)	emphasizes physical settlement with Urban Revitalization, Urban Redevelopment, Urban Rehabilitation, and Urban Regeneration strategies.
2. Urban Resillience (Zabetian et al., n.d. 2021)	resilience, mitigation and adaptation

Source: (Mutlu 2009 in Letfiani, 2017 and Targhi et al., 2023)

There are several theories of physical settlement of slums, namely Urban Resilience Theory which emphasizes the resilience of an area to resilience, mitigation and adaptation [5] while Urban Renewal Theory is one of the theories that emphasizes physical settlement with Urban Revitalization, Urban Redevelopment, Urban Rehabilitation, and Urban Regeneration strategies [6] so that the relevant theoretical approach in overcoming the slum problem in the area is the Urban Renewal Theory.

Urban Renewal theory is seen as an appropriate approach to apply in this research because the slum problems in urban village Selumit Pantai cover a variety of physical and non-physical aspects, such as problems in building conditions, roads, solid waste, clean water, wastewater, drainage, and fire protection. The impact of these conditions has the potential to reduce the quality of the environment, social, economy, and community life. [1, 2] Urban renewal theory is a strategy to address slum locations by focusing on the physical improvement of the area, renovation or replacement of dwellings and improvement of public facilities such as parks and roads, by

considering social and economic aspects. Slum redevelopment is done without relocating residents, but rather by improving the environment, social, and economy, with the aim of improving the quality of life of the community. This approach involves designing the area using strategies such as Urban Revitalization, Urban Redevelopment, Urban Rehabilitation, and Urban Regeneration. [6]

Some previous studies on Urban Renewal show a variety of approaches used in different contexts. For example, Alfarisi et al. [7] aims to analyze the rejuvenation of Kampung Aur urban village, Syagata et al. [8] aims to adopt a community preference approach in area rejuvenation, Klau [9] aims to examine area rejuvenation with a focus on the 7 elements of the city, and Wibawa [10] aims to conduct slum rejuvenation by applying the Ecovillage concept. Meanwhile, research on slums in Selumit Pantai Village, Tarakan City, such as that conducted by Priono [3] aims to organize the Selumit Pantai Village Beachfront Settlement based on the Floating Stage Village Concept, with a focus on buildings and community activities. Fadhilah [11], aims to identify the achievements of the Kotaku program on poverty alleviation in Selumit Pantai Village, with a focus on the achievements of the poverty alleviation program.

Based on several previous studies on slums, there has been no research that specifically discusses Urban Renewal or Rejuvenation of coastal areas in Selumit Pantai Village that focuses on the issue of physical rejuvenation of areas related to social and economic activities. Therefore, it is important to conduct research on the physical rejuvenation of the area centered on social and economic activities, by utilizing previous research data that reinforces existing issues and problems. These issues include problems with the physical condition of buildings, neighborhood roads, drainage, clean water, wastewater, solid waste, and fire protection. Thus, the rejuvenation of coastal areas in Selumit Pantai Urban Village of Tarakan City is possible to be implemented.

This research aims to measure the level of slums in the coastal area of Selumit Pantai Urban Village, Tarakan City, which is experiencing the slum phenomenon. In addition, this research also aims to understand the application of Urban Renewal strategies in dealing with slum problems that result in a decrease in the quality of space and environment in the area. The results of this research measure the level of slums resolved by Urban Renewal strategies, namely through the application of regeneration strategies. This is because, in reality, regeneration is the process of healing damaged areas through various methods, including modernization, rehabilitation, and cleaning and redevelopment. [6]

2. Material and Methods

The main focus of this research is to identify the level of slums in the coastal area of Selumit Pantai Urban Village in Tarakan City, which is based on the Mayor's Decree Number 600/HK-IV/197/2021. In the decree, Urban Village Selumit Pantai is categorized as a slum area with a zone of 0.26 km or 26 hectares, in terms of physical aspects and community activities. Therefore, an Urban Renewal solution is a relevant option for handling this problem.

The 26 hectares of observed area has been homogeneously divided by Building Function i.e. overwater settlements into 5 Block areas, this was done to facilitate observation and allow for a more detailed examination of existing slum problems as well as efficient measurement of slum levels. With this division, it will be easier to determine the appropriate Urban Renewal strategy. The following is the division of the block area that has been done:

1. Block (A) 6 Ha in size has 14 neighborhood roads observed.
2. Block (B) 6 Ha has 8 neighborhood roads observed.
3. Block (C) 5 Ha has neighborhood roads observed 7 road segments.
4. Block (D) 5 Ha has neighborhood roads observed 9 road segments.
5. Block (E) 4 Ha has neighborhood roads observed 9 road segments.

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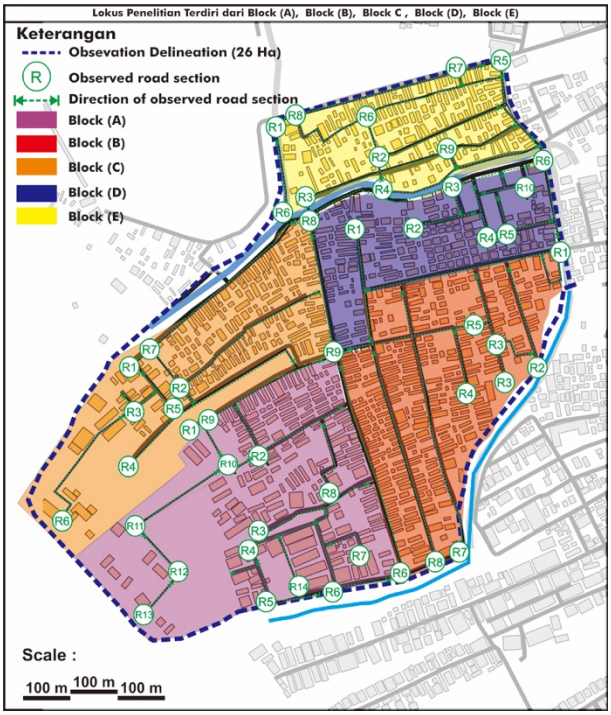

Source: (Author, 2023)
Figure 3: Research location

This research method is conducted with quantitative methods in the form of scoring seven slum indicators, as well as considering population and socio-economic conditions. To collect data, direct observations and interviews were conducted to evaluate the physical condition of the area and surrounding environment, including aspects of buildings, environmental roads, drinking water services, environmental drainage, wastewater management, waste management, fire protection, as well as other considerations related to population and socio-economic conditions. A questionnaire and interview approach were used to obtain data from the community that supported the research variables, while assessments from respondents helped understand the level of slums in the area. Results from field observations, interviews, and documentary data, including photographs, will be analyzed to see how they relate to the existing physical conditions. Starting this process with field observations and interviews, followed by data processing and analysis using Scoring to obtain a classification. The conclusions from the analysis will form the basis for formulating an appropriate rejuvenation strategy for the area.

Table 3: Variables, Indicators and Parameters

Variables	Indicators	Parameters
Building Condition (Shekhar, n.d.) (Pencegahan, 2020)	Spatial non-conformity	RDTR or RTBL requirements
	Building Density	Building Density Level
Road Condition Neighborhood (Pencegahan, 2020)	Coverage of neighborhood road services	Standard neighborhood street (3.00-3.50 m)
	Road Surface Quality	Road Surfaces (hot mix asphalt, concrete, paving)
	Path of shade	Non-shade Road /Shade
Environmental Drainage Condition (Pencegahan, 2020)	Availability of Environmental Drainage	drainage Tertiary or local channel (Closed/Open) & Ideal height/width
Waste management condition (Pencegahan, 2020)	Waste management	processing system
	Waste Infrastructure and Facilities	(TPS/ TPS 3R, TPST)
Clean Water Supply Condition (Pencegahan, 2020)	Clean water availability	60 liters/person/day
	Clean water quality	access to drinking water that has colorless, odorless, and tasteless qualities
Wastewater management condition (Pencegahan, 2020)	Wastewater management infrastructure and facilities	Neckless latrine
	Waste water management system	communal/domestic septic tanks
Fire protection condition (Shekhar, n.d.) (Pencegahan, 2020)	Fire protection facilities	water supply, evacuation routes, communication facilities, (fire extinguishers)
Population conditions (Pencegahan, 2020) (Putri, 2023)	Population Density	Population Density Level
Potential condition of the area (Pencegahan, 2020) (Putri, 2023)	social and economic potential to be developed	RTP, green space, market, dock, natural resources

Source: Synthesis Library, 2023

Site Assessment Formulation Scoring each sub-criterion, [12] based on the following assessment parameters:
-Quality Percentage (0% - 25%): Score 0 (Good)
- Quality Percentage (26% - 50%): Score 1 (Fairly Good)
- Quality Percentage (51% - 75%): Score 2 (Poor)
- Quality Percentage (76% - 100%): Score 3 (Very Bad)

The aim is that there is a clear distinction between slum conditions with the categories of severe slums, moderate slums, and light slums. Assessments from observations on each observed object are summed up so that the total value of each indicator is known, and the value of each indicator is also summed up so that the value of each variable is known. From the value of each variable, it is summed up again so that the total value is obtained which shows the slum condition in the slum area. [12]

The analysis of slum-level conditions was conducted through a slum indicator assessment study focused on the physical component, using weighting, scoring, and slum assessment indicator variables. Each variable and assessment of each parameter is identified in accordance with the RP2KPKP Guidance Document [12] and the Minister of Public Works and Housing Regulation No. 2/2016 on Quality Improvement of Slum Settlements. The assessment is carried out at each observation point, then the values are summed and ranked. The final summation results are used to rank the slum levels, which are then categorized as

1. Severe Slum with a score of 34-48,
2. Moderate Slum with a value of 28-33,
3. Light Slum with a score of 16-27.

Furthermore, the rejuvenation handling pattern is planned using the Urban Renewal Strategy, which is appropriate for each slum block.

3. Results and Discussions

3.1 Block A Analysis

Block A, with an area of 6 hectares, serves as a settlement located above the sea. This block faces issues related to building codes and basic infrastructure, therefore, it is important to measure the existing slum levels in Block A as follows:

1) Building conditions are analyzed based on two measurement parameters, namely the level of buildings that violate spatial provisions and the level of building density. According to the Tarakan City Space Envelope RTBL, this parameter regulates that the Basic Building Coefficient (KDB) should not exceed 40%, the Basic Green Coefficient (KDH) should not be less than 30%, the GSS (River boundary line 13 m) and the maximum building height is 5 floors. The building density level is measured using hectare size data from aerial maps. Based on the analysis of these two parameters, it can be concluded as follows:

Table 4: Building Requirements

Parameters	Area (HA) Findings	Average Percentage Score	Score
KDB >40 %	5,46 Hectares	54 %	2
Maximum TB 5 floors	0 Hectares		
KDH <30%	5,46 Hectares		
GSS 13m from US	2 Hectares		

Source: Author, 2024

The results of the analysis show that the average percentage of violations of spatial provisions for the building level is 54%, which results in a score of 2 and is classified as moderate in this parameter.

Table 5: Building Requirements

Parameters	Area (HA) Findings	Percentage Value	Score
Building density	5,46 Ha	91%	3

Source: Author, 2024

The results of the analysis with the building density parameter, which is calculated through observation of satellite image maps, resulted in a built-up area of 5.46 hectares with a percentage of 91%. this parameter received a score of 3 and is classified as poor in this parameter.

2) Analysis of Neighborhood Road conditions, there are 14 sections with a length of 907.5 m measured based on 3 parameters, namely the standard width of neighborhood roads, the quality of the road surface, and the presence of shade. Based on the Indonesian government regulation No. 34 of 2006 concerning roads, secondary neighborhood roads must have a road body width of at least 3-3.5 meters. Based on the analysis, the following results were obtained:

Table 6: Neighborhood Road

Parameters	Length (m) Findings	Percentage Value	Score
Road Width > 3- 3.5 m	877,5 m	96 %	3
No Surface (Hotmix, Concrete, Paving block, Stone)	486 m	53%	2
Has no shade	907,5 m	100%	3

Source: Author, 2024

The analysis showed that 96% of the total roads did not meet the regulated standard width, while 100% of the roads lacked shade. Therefore, this parameter received a score of 3, indicating a poor classification. While on the non-standard road surface quality parameter, 53% of the total roads scored 2, indicating a moderate condition.

3) Environmental Drainage condition analysis, observations were made on the availability of environmental drainage. The results of the analysis are as follows:

Table 7: Neighborhood Drainage

Parameters	Area (HA) Findings	Percentage Value	Score
Unavailability of Drainage	6 Ha	100%	3

Source: Author, 2024

The results of the analysis related to the parameter of unavailability of environmental drainage show that an area of 6 hectares does not have environmental drainage, covering the entire area with a percentage of 100%. Therefore, this parameter received a score of 3, indicating poor conditions.

4) Analysis of waste management conditions, observations were made with a focus on management systems that do not meet the requirements and the absence of facilities and infrastructure. The analysis of the field observation results will be explained below.

Table 8: Waste

Parameters	Area (HA) Findings	Percentage Value	Score
System not available	6 Ha	100%	3
Facilities and infrastructure not available	6 Ha	100%	3

Source: Author, 2024

The analysis shows that 6 hectares of the area, or all of it, has a management system that does not meet the requirements and the unavailability of facilities and infrastructure, with a percentage of 100%. Therefore, this parameter received a score of 3, indicating poor conditions for this parameter.

5) Analysis of clean water conditions, observations were made with a focus on the unmet need for clean water and the lack of safe access to clean water. The analysis of the field observation results will be explained as follows.

Table 9: Clean water

Parameters	Area (HA) Findings	Percentage Value	Score
Unmet need for clean water	0 Ha	0 %	0
Do not have safe access to clean water	6 Ha	100 %	3

Source: Author, 2024

The results of the analysis show that on the parameter of unmet need for clean water, the entire area is met with 0 hectares of area or 100% of the total area meeting this need, giving a score of 0 indicating Good conditions. However, when measured against the parameter of safe access to clean water, 6 hectares of area, or 100% of the total area, does not have such access, hence a score of 3 indicating poor condition on safe access to clean water.

6) Wastewater conditions were analyzed for non-compliant wastewater management systems and non-standard wastewater management facilities.

Table 10: Waste Water

Parameters	Area (HA) Findings	Percentage Value	Score
System Does not meet requirements	6 Ha	100 %	3
Facilities Not up to standard	6 Ha	100 %	3

Source: Author, 2024

The analysis shows that for the parameters Non-compliant wastewater management system and non-standard wastewater management facilities, the entire area of 6 hectares, or 100% of the total area, does not meet these requirements. Therefore, a score of 3 was given, indicating poor conditions on this parameter.

7) Fire protection condition analysis was conducted on the availability of fire facilities and infrastructure as follows:

Table 11: Fire Protection

Parameters	Area (HA) Findings	Percentage Value	Score
facilities and infrastructure are not available	6 Ha	100 %	3

Source: Author, 2024

The analysis shows that in the fire facilities and infrastructure parameter, there are 6 hectares of area that do not have fire facilities and infrastructure, which is equivalent to a

percentage of 100% of the total area. Thus, this parameter was given a score of 3, indicating poor condition.

8) Population conditions were measured by averaging field data with the observed area. An analysis was conducted on the population density parameter, which was measured through direct field observations.

Table 12: Population density

Parameters	Soul/Ha Findings	Percentage Value	Score
Population density	1.688 Jiwa	28%	1

Source: Author, 2024

The analysis shows that the total population in this block is 1.688, which is equivalent to a percentage of 29% of the total block area. Thus, the population density parameter was given a score of 1, indicating Good conditions.

9) Social and economic conditions are measured by considering the social and economic potential of the area. The analysis was conducted through direct field observation of RTP, RTH, Market, Dock, Natural Resources to get an accurate picture of the average calculated with the area of observation.

Table 13: Social and Economic

Parameters	Area (HA) Findings	Percentage Value	Score
social and economic potential to Developed	0,109 Ha	99,89 %	3

Source: Author, 2024

The analysis shows that out of a total area of 6 hectares, only 0.109 hectares has the social and economic potential to be developed. This reflects a percentage of 99.89%. As such, this parameter was given a score of 3, indicating poor conditions for the social and economic potential of the area.

3.2 Block B Analysis

Block B, with an area of 6 hectares, serves as a settlement located above the sea. This block faces issues related to building codes and basic infrastructure. As follows:

1) Building conditions are analyzed based on two measurement parameters, namely the level of buildings that violate spatial provisions and the level of building density. According to the Tarakan City Spatial Envelope RTBL, these parameters stipulate that the Basic Building Coefficient (KDB) should not exceed 40%, the Basic Green Coefficient (KDH) should not be less than 30%, the GSS (River boundary line 13 m) and the maximum building height is 5 floors. The building density level is measured using hectare size data from aerial maps. Based on the analysis of these two parameters, it can be concluded as follows:

Table 14: Building Requirements

Parameters	Area (HA) Findings	Average Percentage Score	Score
KDB >40 %	5,47 Hectares	52 %	2
Maximum TB 5 floors	0 Hectares		
KDH <30%	5,47 Hectares		
GSS 13m from US	1,5 Hectares		

Source: Author, 2024

After analysis, the results show that the average percentage level of buildings that violate spatial provisions is 52%, which results in a score of 2. The score classifies the condition as "Moderate Level" on this parameter

Table 15: Building Requirements

Parameters	Area (HA) Findings	Percentage Value	Score
Building density	5,47 Ha	91%	3

Source: Author, 2024

After analysis, the results show that the built-up area is 5.47 hectares, with a percentage of 91%, resulting in a score of 3. The score classifies the condition as Poor for this parameter.

2) Analysis of Neighborhood Road conditions, there are 8 sections with a length of 823 m measured based on 3 parameters, namely the standard width of neighborhood roads, the quality of the road surface, and the presence of shade. Based on Indonesian government regulation No. 34 of 2006 concerning roads, secondary neighborhood roads must have a road body width of at least 3-3.5 meters. Based on the analysis, the following results were obtained:

Table 16: Neighborhood Road

Parameters	Length (m) Findings	Percentage Value	Score
Road Width > 3- 3.5 m	823 m	100 %	3
No Surface (Hotmix, Concrete, Paving block, Stone)	0 m	0%	0
Has no shade	823 m	100%	3

Source: Author, 2024

After analysis, it was found that the parameters of standard road width, non-standard surface quality, and absence of shade, were evaluated by observing 8 road sections with a total length of 823 meters as listed in Table 16. The analysis showed that 100% of the roads did not meet the standard width, and all of them lacked shade, resulting in a score of 3, indicating a classification as Poor. However, under the parameter of non-standard road surfaces, the percentage found was 0%, thus scoring 0, indicating a Good condition.

3) Analysis of Environmental Drainage conditions, observations were made on the availability of environmental drainage. The results of the analysis are as follows:

Table 7: Neighborhood Drainage

Parameters	Area (HA) Findings	Percentage Value	Score
Unavailability of Drainage	6 Ha	100%	3

Source: Author, 2024

After analysis, with the parameter of unavailability of environmental drainage. The results of the analysis show that 6 hectares of the area do not have environmental drainage, reaching a percentage of 100% of the entire area, thus getting a score of 3, which indicates a Poor condition on this parameter.

4) Analysis of waste management conditions, observations were made with a focus on management systems that do not meet the requirements and the absence of facilities and infrastructure. The analysis of the field observation results will be explained below.

Table 18: Waste

Parameters	Area (HA) Findings	Percentage Value	Score
System not available	6 Ha	100%	3
Facilities and infrastructure not available	6 Ha	100%	3

Source: Author, 2024

Based on the results of the analysis, there are 6 hectares of area or the entire area assessed as not meeting the requirements of the waste management system and having no facilities and infrastructure available. This results in a percentage of 100%, giving the area a score of 3, indicating poor conditions for this parameter.

5) Analysis of clean water conditions, observations were made with a focus on the unmet need for clean water and the lack of safe access to clean water. The analysis of the field observation results will be explained as follows.

Table 19: Clean water

Parameters	Area (HA) Findings	Percentage Value	Score
Unmet need for clean water	0 Ha	0 %	0
Do not have safe access to clean water	6 Ha	100 %	3

Source: Author, 2024

Based on the results of the analysis, it is known that all areas have fulfilled the need for clean water, so that the entire area has a percentage of 0%. This results in a score of 0, indicating a Good condition for this parameter because all areas have clean water. However, when measured against the parameter of not having safe access to clean water, it was found that 6 hectares of area or the entire area had a percentage of 100%, resulting in a score of 3, indicating a Poor condition on safe access to clean water.

6) Wastewater conditions were analyzed for wastewater management systems that do not meet the requirements and non-standard wastewater management facilities.

Table 20: Waste Water

Parameters	Area (HA) Findings	Percentage Value	Score
System Does not meet requirements	2,5 Ha	58 %	2
Facilities Not up to standard	6 Ha	100 %	3

Source: Author, 2024

The results of the analysis show that in the parameter of wastewater management systems that do not meet the requirements, it was found that 2.5 hectares of the area had a percentage of 58%. Thus, this parameter received a score of 2, indicating a Moderate condition. Meanwhile, when measured against the parameter of non-standardized wastewater management facilities, the entire 6 hectares area showed a percentage of 100%. This results in a score of 3, indicating a Poor condition for this parameter.

7) Fire protection condition analysis was conducted on the availability of fire facilities and infrastructure as follows:

Table 21: Fire Protection

Parameters	Area (HA) Findings	Percentage Value	Score
facilities and infrastructure are not available	6 Ha	100 %	3

Source: Author, 2024

The analysis shows that in the parameter of unavailable fire facilities and infrastructure, it was found that the entire 6-hectare area does not have fire facilities and infrastructure, with a percentage of 100%. Therefore, this parameter received a score of 3, indicating a Poor condition for this parameter.

8) Population conditions were measured by averaging field data with the observed area. An analysis was conducted on the population density parameter, which was measured through direct field observation.

Table 22: Population density

Parameters	Soul/Ha Findings	Percentage Value	Score
Population density	2.953 Jiwa	49 %	1

Source: Author, 2024

The analysis of the population density parameter shows that the total population in this block is 2,953 people, which is equivalent to a percentage of 49% of the total block area. Thus, this block obtained a score of 1, indicating Good condition on the population density parameter.

9) Social and economic conditions are measured by considering the social and economic potential of the area. The analysis was conducted through direct field observation of RTP, RTH, Market, Dock, Natural Resources to get an accurate picture calculated by averaging the area of observation.

Table 23: Social and Economic

Parameters	Area (HA) Findings	Percentage Value	Score
social and economic potential to Developed	0,41 Ha Ha	99,59 %	3

Source: Author, 2024

The results of the analysis of the parameters of having social and economic potential show that of the total area of 6 hectares, only 0.41 hectares of the area has social and economic potential to be developed. The percentage is 99.59%. Thus, the area received a score of 3, indicating a Poor condition for this parameter.

3.3 Block C Analysis

Block C, with an area of 5 hectares, functions as a settlement located above the sea. This block faces the following problems related to building codes and basic infrastructure:

1) Building conditions are analyzed based on two measurement parameters, namely the level of buildings that violate spatial provisions and the level of building density. According to the Tarakan City Space Envelope RTBL, this parameter regulates that the Basic Building Coefficient (KDB) should not exceed 40%, the Basic Green Coefficient (KDH) should not be less than 30%, the GSS (River boundary line 13 m) and the maximum building height is 5 floors. The building density level is measured using hectare size data from aerial maps. Based on the analysis of these two parameters, it can be concluded as follows:

Table 24: Building Requirements

Parameters	Area (HA) Findings	Average Percentage Score	Score
KDB >40 %	3,2 Ha	45 %	1
Maximum TB 5 floors	0 Ha		
KDH <30%	3,2 Ha		
GSS 13m from US	2 Ha		

Source: Author, 2024

The results of the analysis show that the parameter of the level of buildings that violate spatial provisions has an average percentage of 45%, which is then given a score of 1. With this score, the conditions in this parameter are classified as Good Level.

Table 25: Building Requirements

Parameters	Area (HA) Findings	Percentage Value	Score
Building density	3,2 Ha	64 %	3

Source: Author, 2024

The results of the analysis with the building density parameter, calculated through observation of the satellite image map, resulted in a built-up area of 3.2 hectares, with a percentage of 64%, resulting in a score of 3 indicating a Poor Level for this parameter.

2) Analysis of Neighborhood Road conditions, there are 7 sections with a length of 1,016 m measured based on 3 parameters, namely the standard width of neighborhood roads, the quality of the road surface, and the presence of shade. Based on the Indonesian government regulation No. 34 of 2006 concerning roads, secondary neighborhood roads must have a road body width of at least 3-3.5 meters. Based on the analysis, the following results were obtained:

Table 26: Neighborhood Road

Parameters	Length (m) Findings	Percentage Value	Score
Road Width > 3- 3.5 m	1.016 m	100%	3
No Surface (Hotmix, Concrete, Paving block, Stone)	300 m	29 %	1
Has no shade	1.016 m	100%	3

Source: Author, 2024

The results of the analysis, as listed in Table 26, show that the road does not meet the width standard and has no shade, both conditions reach 100%, thus obtaining a score of 3 indicating a Poor Level. While in the parameter of non-standard road surface quality, with a length of 300 meters or a percentage of 29%, getting a score of 1 which indicates a Good condition.

3) Analysis of Environmental Drainage conditions, observations were made on the availability of environmental drainage. The results of the analysis are as follows:

Table 27: Neighborhood Drainage

Parameters	Area (HA) Findings	Percentage Value	Score
Unavailability of Drainage	5 Ha	100%	3

Source: Author, 2024

The results of the analysis show that there are 5 hectares of areas that are not equipped with environmental drainage systems, reaching a percentage of 100% of the entire area. Thus, this parameter was given a score of 3 indicating poor conditions.

4) Analysis of waste management conditions, observations were made with a focus on management systems that do not meet the requirements and the absence of facilities and infrastructure. The analysis of the field observation results will be explained below.

Table 28: Waste

Parameters	Area (HA) Findings	Percentage Value	Score
System not available	5 Ha	100%	3
Facilities and infrastructure not available	5 Ha	100%	3

Source: Author, 2024

The analysis shows that within the total area of 5 hectares, all areas do not meet the requirements of the solid waste management system and the necessary facilities and infrastructure are not available, reaching a percentage of 100%. Therefore, this parameter was given a score of 3, indicating a poor condition for this parameter.

5) Analysis of clean water conditions, observations were made with a focus on the unmet need for clean water and the lack of safe access to clean water. The analysis of the field observations will be explained as follows.

Table 29: Clean water

Parameters	Area (HA) Findings	Percentage Value	Score
Unmet need for clean water	0 Ha	0 %	0
Do not have safe access to clean water	5 Ha	100 %	3

Source: Author, 2024

The analysis shows that there are 0 hectares that do not meet the need for clean water, reaching a percentage of 0%. Thus, this parameter was given a score of 0, indicating a Good condition in all areas where the need for clean water is well met. However, in terms of not having safe access to clean water, it was found that 5 hectares of the area, or an overall percentage of 100%, did not have safe access to clean water. Therefore, this parameter was given a score of 3, indicating poor conditions on safe access to clean water.

6) Wastewater conditions were analyzed for non-compliant wastewater management systems and non-standard wastewater management facilities.

Table 30: Waste Water

Parameters	Area (HA) Findings	Percentage Value	Score
System Does not meet requirements	5 Ha	100 %	3
Facilities Not up to standard	5 Ha	100 %	3

Source: Author, 2024

The analysis shows that the system parameter does not meet the requirements, covering 5 hectares of area, or an overall percentage of 100%. Thus, this parameter was given a score of 3, indicating a poor condition on this parameter. In addition, when measured against the parameter of wastewater management facilities not meeting standards, it was found that 5 hectares of the area, with an overall percentage of 100%, also did not meet the set standards. Therefore, this parameter was also given a score of 3, indicating poor condition on that parameter.

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7) Fire protection condition analysis was conducted on the availability of fire facilities and infrastructure as follows:

Table 31: Fire Protection

Parameters	Area (HA) Findings	Percentage Value	Score
facilities and infrastructure are not available	5 Ha	100 %	3

Source: Author, 2024

The analysis shows that in the parameter of unavailable fire facilities and infrastructure, there are 5 hectares of areas that are not equipped with fire facilities and infrastructure or covering the entire area with a percentage of 100%. Thus, this parameter was given a score of 3, indicating poor conditions for this parameter.

8) Population condition analysis is measured by averaging field data with the observation area. Analysis was conducted on the population density parameter, which was measured through direct field observation.

Table 32: Population density

Parameters	Soul/Ha Findings	Percentage Value	Score
Population density	2.773 Jiwa	55 %	2

Source: Author, 2024

The analysis of the population density parameter shows that the total population in this block is 2,773 people, which is equivalent to a percentage of 55% of the total block area. Thus, this block was given a score of 2, indicating a moderate condition on this parameter.

9) Social and economic conditions are measured by considering the social and economic potential of the area. The analysis was conducted through direct field observation of RTP, RTH, Market, Dock, Natural Resources to get an accurate picture calculated by averaging the area of observation.

Table 33: Social and Economic

Parameters	Area (HA) Findings	Percentage Value	Score
social and economic potential to Developed	0,049 Ha	99,02 %	3

Source: Author, 2024

The results of the analysis show that out of the total area of 5 hectares observed, only 0.049 hectares of the area has social and economic potential to be developed. The percentage of this potential is 99.02%. Thus, this parameter was given a score of 3, indicating poor conditions for the social and economic potential of the area.

3.4 Block D Analysis

Block D, with an area of 5 hectares, is a residential area located above the sea. There are the following problems related to the building layout and basic infrastructure in the block:

1) Building conditions are analyzed based on two measurement parameters, namely the level of buildings that violate spatial provisions and the level of building density. According to the Tarakan City Space Envelope RTBL, this parameter regulates that the Basic Building Coefficient (KDB) should not exceed 40%, the Green Basic Coefficient (KDH) should not be less than 30%, the GSS (13 m river border line) and the maximum building height is 5 floors. The building density level is measured using hectare size data from aerial maps. Based on the analysis of these two parameters, it can be concluded as follows:

Table 34: Building Requirements

Parameters	Area (HA) Findings	Average Percentage Score	Score
KDB >40 %	4,83 Ha	55 %	2
Maximum TB 5 floors	0 Ha		
KDH <30%	4,83 Ha		
GSS 13m from US	1 Ha		

Source: Author, 2024

The results of the analysis show that the parameter of the level of buildings that violate spatial provisions has an average percentage of 55%, which results in a score of 2. This score indicates that the condition is classified as moderate in the classification of this parameter.

Table 35: Building Requirements

Parameters	Area (HA) Findings	Percentage Value	Score
Building density	4,83 Ha	97%	3

Source: Author, 2024

The results of the analysis with the building density parameter, calculated by observing the satellite image map, showed a built-up area of 4.83 hectares with a percentage of 97%. This results in a score of 3, indicating a classification of Poor for this parameter.

2) Analysis of Neighborhood Road conditions, there are 9 sections with a length of 854 m measured based on 3 parameters, namely the standard width of neighborhood roads, the quality of the road surface, and the presence of shade. Based on Indonesian government regulation No. 34 of 2006 concerning roads, secondary neighborhood roads must have a road body width of at least 3-3.5 meters. Based on the analysis, the following results were obtained:

Table 36: Neighborhood Road

Parameters	Length (m) Findings	Percentage Value	Score
Road Width > 3- 3.5 m	845 m	96 %	3
No Surface (Hotmix, Concrete, Paving block, Stone)	0 m	0 %	0
Has no shade	854 m	100%	3

Source: Author, 2024

The results show that 96% of the streets do not meet the standard width, and all neighborhood streets lack shade, reaching 100%. Therefore, this parameter scored 3, indicating a Poor classification. Meanwhile, on the parameter of non-standardized road surface quality, all the roads met the criteria, thus scoring 0, indicating Good condition.

3) Analysis of Environmental Drainage conditions, observations were made on the availability of environmental drainage. The results of the analysis are as follows:

Table 37: Neighborhood Drainage

Parameters	Area (HA) Findings	Percentage Value	Score
Unavailability of Drainage	5 Ha	100%	3

Source: Author, 2024

The results of the analysis with the parameter of unavailability of environmental drainage show that there are 5 hectares of the area that do not have environmental drainage, reaching a percentage of 100% of the entire area. Therefore, this parameter was given a score of 3, indicating a poor condition for this parameter.

4) Analysis of waste management conditions, observations were made with a focus on management systems that do not meet the requirements and the absence of facilities and infrastructure. The analysis of the field observation results will be explained below.

Table 38: Waste

Parameters	Area (HA) Findings	Percentage Value	Score
System not available	5 Ha	100%	3
Facilities and infrastructure not available	5 Ha	100%	3

Source: Author, 2024

The analysis shows that there are 5 hectares of the area, or the entire area, that does not meet the requirements of the management system and has no facilities and infrastructure available, reaching a percentage of 100%. Therefore, this parameter was given a score of 3, indicating a poor condition for this parameter.

5) Analysis of clean water conditions, observations were made with a focus on the unmet need for clean water and the lack of safe access to clean water. The analysis of the field observation results will be explained as follows.

Table 39: Clean water

Parameters	Area (HA) Findings	Percentage Value	Score
Unmet need for clean water	0 Ha	0 %	0
Do not have safe access to clean water	5 Ha	100 %	3

Source: Author, 2024

This parameter shows that all areas have met the need for clean water with a percentage of 0%, hence a score of 0 is classified as Good. However, when measured by the parameter assessing safe access to clean water, there are 5 hectares of areas, or a total of 100%, that do not have safe access to clean water. Therefore, this parameter was given a score of 3, indicating poor conditions on safe access to clean water.

6) Wastewater conditions were analyzed for non-compliant wastewater management systems and non-standard wastewater management facilities.

Table 40: Wastewater

Parameters	Area (HA) Findings	Percentage Value	Score
System Does not meet requirements	2 Ha	60 %	2
Facilities Not up to standard	5 Ha	100 %	3

Source: Author, 2024

The results of the analysis showed that on the parameter of wastewater management system not meeting the requirements, it was found that there were 5 hectares of area, covering a

percentage of 100%. In addition, when measured against the parameter of non-standardized wastewater management facilities, it was found that 2 hectares of the area, covering a percentage of 60%, did not meet the set standards. As such, this parameter was given a score of 2, indicating a moderate condition on the parameter.

7) Fire protection condition analysis was conducted on the availability of fire facilities and infrastructure as follows:

Table 41: Fire Protection

Parameters	Area (HA) Findings	Percentage Value	Score
facilities and infrastructure are not available	5 Ha	100 %	3

Source: Author, 2024

The analysis shows that within the 5-hectare area, the entire area, or 100%, does not have adequate fire facilities and infrastructure. Therefore, the area was given a score of 3, indicating poor condition on this parameter.

8) Population condition analysis was measured by averaging field data with the observed area. The analysis was conducted on the population density parameter, which was measured through direct field observation.

Table 42: Population density

Parameters	Soul/Ha Findings	Percentage Value	Score
Population density	1.627 Jiwa	32 %	1

Source: Author, 2024

The analysis shows that the population in this block is 1,627, which is equivalent to a percentage of 32% of the total area of 5 hectares. As such, the area was given a score of 1, indicating a poor condition on this population density parameter.

9) Analysis of social conditions and social and economic conditions was measured by considering the social and economic potential of the area. The analysis was conducted through direct field observation of RTP, RTH, Market, Dock, Natural Resources to get an accurate picture calculated by averaging the area of observation.

Table 43: Social and Economic

Parameters	Area (HA) Findings	Percentage Value	Score
social and economic potential to Developed	0,049 Ha	99,02 %	3

Source: Author, 2024

The analysis shows that of the total area of 5 hectares, only 0.43 hectares have social and economic potential to be developed. The percentage is 99.4%. Therefore, this parameter was given a score of 3, indicating poor conditions on the social and economic potential of the area.

3.5 Block E Analysis

Block E, which has an area of 4 hectares, functions as a settlement located above the sea. This block suffers from the following problems in building layout and basic infrastructure:

1) Building conditions are analyzed based on two measurement parameters, namely the level of buildings that violate spatial provisions and the level of building density. According to the Tarakan City Space Envelope RTBL, this parameter regulates that the Basic Building Coefficient (KDB) should not exceed 40%, the Basic Green Coefficient (KDH) should not be less than 30%, the GSS (River boundary line 13 m) and the maximum building height is 5 floors. The building density level is measured using hectare size data from aerial maps. Based on the analysis of these two parameters, it can be concluded as follows:

Table 44: Building Requirements

Parameters	Area (HA) Findings	Average Percentage Score	Score
KDB >40 %	3,85 Ha	54 %	2
Maximum TB 5 floors	0 Ha		
KDH <30%	3,85 Ha		
GSS 13m from US	1 Ha		

Source: Author, 2024

The results of the analysis show that the parameter of the level of buildings that violate spatial provisions has an average percentage of 54%, which results in a score of 2. Thus, the condition can be classified as Medium Level on this parameter.

Table 45: Building Requirements

Parameters	Area (HA) Findings	Percentage Value	Score
Building density	3,85 Ha	96 %	3

Source: Author, 2024

The results of the analysis with the building density parameter, calculated through observation of the satellite image map, showed that the built-up area reached 3.85 hectares with a percentage of 96%. As such, this results in a score of 3, which classifies the condition as Poor for this parameter.

2) Neighborhood Road condition analysis, there are 9 sections with a length of 1,214 m measured based on 3 parameters, namely the standard width of neighborhood roads, the quality of the road surface, and the presence of shade. Based on Indonesian government regulation No. 34/2006 on roads, secondary neighborhood roads must have a road body width of at least 3-3.5 meters. Based on the analysis, the following results were obtained:

Table 46: Neighborhood Road

Parameters	Length (m) Findings	Percentage Value	Score
Road Width > 3- 3.5 m	1.214 m	100 %	3
No Surface (Hotmix, Concrete, Paving block, Stone)	336 m	27 %	1
Has no shade	1.116 m	95 %	3

Source: Author, 2024

The analysis shows that 100% of roads do not meet the standard width, while 95% of roads do not have shade, giving a score of 3 indicating a Poor classification. In addition, in the parameter of non-standard road surface quality, a percentage of 27% was obtained, so a score of 1 was given, indicating a Good condition.

3) Analysis of Environmental Drainage conditions, observations were made on the availability of environmental drainage. The results of the analysis are as follows:

Table 37: Neighborhood Drainage

Parameters	Area (HA) Findings	Percentage Value	Score
Unavailability of Drainage	4 Ha	100%	3

Source: Author, 2024

The analysis shows that in the parameter of unavailability of environmental drainage, there are 4 hectares of areas that are not equipped with drainage systems. This resulted in the entire area having a percentage of 100% without environmental drainage, which led to the assignment of a score of 3, indicating poor conditions on this parameter.

4) Analysis of waste management conditions, observations were made with a focus on management systems that do not meet the requirements and the absence of facilities and infrastructure. The analysis of the field observation results will be explained below.

Table 48: Waste

Parameters	Area (HA) Findings	Percentage Value	Score
System not available	4 Ha	100%	3
Facilities and infrastructure not available	4 Ha	100%	3

Source: Author, 2024

The analysis shows that in the management system parameter, there are 4 hectares of area or the entire area that does not meet the requirements, with facilities and infrastructure that are not available, reaching a percentage of 100%. Therefore, this parameter was given a score of 3, indicating poor conditions in the area.

5) Analysis of clean water conditions, observations were made with a focus on the unmet need for clean water and the lack of safe access to clean water. The analysis of the field observations will be explained as follows.

Table 49: Clean water

Parameters	Area (HA) Findings	Percentage Value	Score
Unmet need for clean water	0 Ha	0 %	0
Do not have safe access to clean water	4 Ha	100 %	3

Source: Author, 2024

The results of the analysis show that there is no area that does not meet the need for clean water, with a percentage of 0%, so it is given a score of 0 which indicates Good conditions in this parameter, because all areas have met clean water. However, when measured by the parameter of safe access to clean water, it was found that 4 hectares of area or an overall percentage of 100% did not have safe access to clean water. Therefore, this parameter was given a score of 3, indicating a poor condition on safe access to clean water.

6) Wastewater conditions were analyzed for non-compliant wastewater management systems and non-standard wastewater management facilities.

Table 50: Waste Water

Parameters	Area (HA) Findings	Percentage Value	Score
System Does not meet requirements	4 Ha	100 %	3
Facilities Not up to standard	4 Ha	100 %	3

Source: Author, 2024

The results of the analysis show that the entire area, totaling 4 hectares, does not meet the requirements in the wastewater management system, with a percentage of 100%. In addition, when viewed from the parameter of non-standardized wastewater management facilities, there are also 4 hectares of area with a percentage of 100% that do not meet the standard. Therefore, both were given a score of 3, indicating poor conditions on both parameters.

7) Fire protection condition analysis was conducted on the availability of fire facilities and infrastructure as follows:

Table 51: Fire Protection

Parameters	Area (HA) Findings	Percentage Value	Score
facilities and infrastructure are not available	4 Ha	100 %	3

Source: Author, 2024

The analysis shows that within the 4 hectares of the area, 100% of the area has no fire facilities and infrastructure. Thus, this parameter was given a score of 3, indicating a poor condition on the presence of fire facilities and infrastructure in the area.

8) The analysis of population conditions was measured by averaging field data with the observed area. Analysis was conducted on the population density parameter, which was measured through direct field observation.

Table 52: Population density

Parameters	Soul/Ha Findings	Percentage Value	Score
Population density	2.299 Jiwa	46 %	1

Source: Author, 2024

The analysis shows that the total population in this block is 2,299, which is equivalent to a percentage of 46% of the total block area. Thus, the population density parameter was given a score of 1, indicating poor conditions on this parameter.

9) Analysis of social conditions and social and economic conditions is measured by considering the social and economic potential of the area. The analysis was conducted through direct field observations of RTP, RTH, Market, Dock, Natural Resources to get an accurate picture of the average calculated with the area of observation. The following is the resulting analysis:

Table 53: Social and Economic

Parameters	Area (HA) Findings	Percentage Value	Score
social and economic potential to Developed	0,011 Ha	99,81 %	3

Source: Author, 2024

The results of the analysis show that out of a total area of 4 hectares, only 0.11 hectares have social and economic potential to be developed, equivalent to a percentage of 99.81%. As such, this parameter was given a score of 3, signifying poor conditions on the social and economic potential of the area.

F. Discussion of Findings

Table 54: Findings

Variables	**Indicators**	**BLOCK A**		**BLOCK B**		**BLOCK C**		**BLOCK D**		**BLOCK E**	
		Score	**x̄**	**Score**	**x̄**	**Score**	**x̄**	**Score**	**x̄**	**Score**	**x̄**
Building Condition	Spatial provisions	2	2,5	2	2,5	1	1,5	2	2,5	2	2,5
	Building density	3		3		2		3		3	
Neighborhood road condition	Service coverage of neighborhood roads	3	2,6	3	2	3	1,6	3	2	3	2
	Road surface quality	2		0		1		0		1	
	Road Shade	3		3		3		3		3	
Environmental Drainage Condition	Drainage availability	3	3	3	3	3	3	3	3	3	3
Waste management condition	Waste management system	3	3	3	3	3	3	3	3	3	3

	Waste management facilities and infrastructure	3		3		3		3		3	
Clean water supply condition	Clean water availability	0	1,5	0	1,5	0	1,5	0	1,5	0	1,5
	Clean water quality	3		3		3		3		3	
Wastewater management condition	Wastewater management infrastructure and facilities	3	3	2	1,5	3	3	2	2,5	3	3
	Waste water management system	3		3		3		3		3	
Fire protection condition	Fire protection facilities and infrastructure	3	3	3	3	3	3	3	3	3	3
Population density condition	Population density	1	1	1	1	2	2	1	1	1	1
Condition of area potential	Social and economic potential	3	3	3	3	3	3	3	3	3	3
Total Score		38	5	35	4	36	5	35	4	37	5
Classification											
Slum Level		**Weight**		**Weight**		**Weight**		**Weight**		**Weight**	

Source: Author, 2024

Table 55: Findings And Recommendations

Rate	Block A	Block B	Block C	Block D	Block E
Classification	5	4	5	4	5
Slum Class	3	3	3	3	3
Level	Weigh t	Weigh t	Weigh t	Weigh t	Weigh t
Strategy	Urban Regeneratition				

Source: Author, 2024

Problem identification shows that slums in urban village Selumit Pantai are caused by high building density in 4 blocks of A,B,D and E while Block C is classified as uncrowded, lack of basic infrastructure seen in the wastewater system in blocks A,C, and E. The system and facilities are poor but in Blocks B and D are moderate because some areas already have standard systems and infrastructure, lack of social and economic potential in all blocks of A,B,C,D and E areas.

The findings related to the slum level in Selumit Pantai Urban Village, Tarakan City, show that each block observed is experiencing severe slums in all aspects, physical, social and economic. These findings indicate the need to improve infrastructure and the quality of life of residents. In response, an Urban Renewal plan was developed to address slum issues and improve the quality of the environment and community life.

In the Urban Renewal plan, the recommended strategy to implement is the Regeneration Strategy, which is the process of improving poor areas through various methods, ranging from modernization to redevelopment, the Regeneration Strategy is focused on building and improving basic infrastructure, increasing social and economic potential, and integrating sustainable design principles such as the use of renewable energy, building parks and green open spaces, and reducing waste, so that this Urban Regeneration plan can gradually overcome slums, improve the quality of life of residents, and create a healthier and more sustainable environment for future generations . [3]

4. Conclusion

From the results of problem identification, it can be concluded that slums in urban village Selumit Pantai are caused by several main factors, including high building density in Blocks A, B, D, and E, while Block C has lower density. Lack of basic infrastructure is particularly evident in the wastewater systems in Blocks A, C, and E, while Blocks B and D have moderate systems. In addition, there is a lack of social and economic potential across the blocks. These findings confirm that each of the observed blocks is experiencing severe slums in all aspects, whether physical, social or economic. Therefore, efforts are needed to improve infrastructure and the quality of life of residents. In response to this challenge, an Urban Renewal plan has been developed that aims to address the slum problem and improve the quality of the environment and community life.The rejuvenation of the Selumit Pantai coastal area through the implementation of a

well-directed and well-planned Regeneration Strategy, namely improving infrastructure and environmental quality, can reduce the level of slums in the area. This effort is able to improve the welfare of the community and maintain environmental sustainability in the coastal area, thus creating a better and livable environment for its residents.

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