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STUDY ON DETERMINING THE LOCATION FOR THE DEVELOPMENT OF A TYPE A PASSENGER TERMINAL IN TANJUNG SELOR, NORTH KALIMANTAN PROVINCE

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Abstract

Bulungan Regency, with its capital in Tanjung Selor, has a strategic position as the administrative center of North Kalimantan Province and the location of the planned Independent New City (KBM). The increased status of this region has triggered high community mobility, which requires the availability of representative transportation infrastructure. Currently, Tanjung Selor does not have a Type A Passenger Terminal, so transportation operations are not yet optimal and integrated. This study aims to determine the most optimal location for terminal construction and analyze its potential for development as an integrated area. The research method uses a mixed method approach. Location priority is determined using the Analytical Hierarchy Process (AHP) method based on accessibility, spatial planning, technical, economic, and environmental criteria. Furthermore, a spatial analysis based on the Transit Oriented Development (TOD) concept was conducted at the selected locations to measure intermodal integration and accessibility. The AHP analysis results showed the following priority order: (1) Point 4 in Tanjung Selor Hilir (former PU workshop) as the top priority with a cumulative score of 3.00, (2) Point 2 on Jl. Sengkawit with a score of 2.90, and (3) Point 1 on Jl. Sabanar Lama with a score of 2.69. Further TOD analysis shows that Point 4 in Tanjung Selor Hilir has high feasibility as an integrated transportation hub, with a connectivity distance of 3 km to Tanjung Harapan Airport and 6 km to Kayan II Port. Buffering analysis shows that a 500-meter walking radius from this point can reach office and residential centers, supported by the presence of 84 hectares of green open space (RTH) that supports the principle of sustainable development.

Keywords: Type A Passenger Terminal, Analytical Hierarchy Process (AHP), Transit Oriented Development (TOD), Location Selection.

INTRODUCTION

Transportation is a vital component of the national logistics and mobility system, functioning as a driving force for regional development dynamics. In the context of regional development, transportation aims to provide accessibility and convenience for communities in carrying out both economic and social activities. As one of the primary nodes within the road transportation network, terminals play a strategic role not only as places for boarding and alighting passengers, but also as regulators of traffic flow, intermodal transfer points, and elements of spatial planning. This is in line with the mandate of Law Number 22 of 2009 on Road Traffic and Transportation, which emphasizes that passenger terminals serve as bases for public motor vehicles to regulate arrivals and departures, as well as to facilitate integrated modal transfers.

North Kalimantan Province, as a region directly bordering neighboring countries, requires reliable connectivity infrastructure to support the acceleration of uneven economic development. Specifically, Bulungan Regency holds a central role, as Tanjung Selor District has been designated as the provincial capital as well as a Regional Activity Center (PKW). Infrastructure development priorities in this area have increased in line with the strategic plan for the development of the Tanjung Selor Independent New City (Kota Baru Mandiri/KBM) as the provincial government center, as stipulated in the Regional Spatial Plan (RTRW) of North Kalimantan Province for 2017–2037 and the RTRW of Bulungan Regency for 2021–2041. The implementation of the KBM development plan is projected to act as a catalyst for increased population mobility and economic activity, which in turn demands the availability of adequate and representative transportation infrastructure.

Despite its strategic position as the center of government, the actual condition reveals a significant gap in transportation infrastructure in Tanjung Selor. To date, Tanjung Selor does not yet have a Type A Passenger Terminal that serves Inter-Provincial Bus Transport (AKAP) and Cross-Border Transport (ALBN). The absence of such a facility results in suboptimal public transport operations. Based on field observations, public transportation services, particularly Damri buses, are currently centralized in a pool area located within the Tanjung Selor Main Market on Sengkawit Street. This condition is not ideal due to the lack of supporting facilities that ensure passenger comfort and safety. In addition, intermodal integration remains a critical issue that has yet to be addressed. Tanjung Selor is home to Kayan II Port, which serves high-volume river passenger transportation, with total passenger movement reaching 298,480 people between January and June 2024. This substantial volume represents significant demand potential for onward land transportation (AKAP/AKDP). However, the absence of an integrated terminal or one with adequate accessibility to the port disrupts the continuity of efficient travel chains for the community.

The determination of a suitable location for the development of a Type A terminal in Tanjung Selor faces multidimensional challenges, including land-use compatibility with the RTRW, technical feasibility related to topography, as well as social and environmental impacts. In accordance with the Regulation of the Minister of Transportation of the Republic of Indonesia Number 132 of 2015 and Regulation Number 24 of 2021, terminal site selection must consider accessibility, alignment with route networks, and technical and financial feasibility. Given the complexity of these determining variables, site selection cannot be conducted intuitively but instead requires a measurable spatial analysis and multi-criteria decision-making approach. Based on these issues, this study is essential to determine the most optimal priority location for the development of a Type A Passenger Terminal. This research applies the Analytical Hierarchy Process (AHP) method to analyze the priority weights of site selection criteria based on stakeholder perceptions. The results of this study are expected to provide a scientific basis for both regional and central governments in realizing an integrated, efficient transportation hub capable of supporting the growth of Tanjung Selor as the face of the capital of North Kalimantan.

METHOD

This study employs a quantitative approach with a descriptive research design to analyze the determination of terminal development locations based on numerical data collected through questionnaires administered to respondents, including the community and stakeholders in Tanjung Selor, North Kalimantan. The research is conducted in Bulungan Regency, referring to the Regional Spatial Plan (*RTRW*) 2021–2041. The sampling technique applied is non-probability sampling using a purposive sampling method, with a total sample of 278 respondents calculated using the Slovin formula from a population of 770,087 with a 6% margin of error. The data utilized consist of primary data (questionnaire results) and secondary data (spatial maps, transportation networks, land-use maps, and relevant government regulations). Data analysis is conducted using the *Analytical Hierarchy Process (AHP)* method to determine the priority of criteria and terminal location alternatives. The data collection technique follows a quantitative descriptive method to produce an objective representation of the research conditions.

RESULTS AND DISCUSSION

Analysis of Location Criteria Using the Analytical Hierarchy Process (AHP)

Pairwise Comparison Matrix and Indicator Weight Calculation

The pairwise comparison matrix of criteria is constructed using data derived from the average results of the recapitulated questionnaire responses. This matrix represents the relative importance of each criterion. The pairwise comparison matrix and the calculation of indicator weights are structured in a 10×10 matrix, as presented in Table 1 and Table 2.

Table 1. Pairwise Comparison Matrix of Criteria

Indicator	Accessibility Level	Land Suitability (Spatial Plan)	Land Suitability (Road & Route Network)	Suitability with Activity Centers	Harmony with Other Activities	Transport Demand	Technical Feasibility	Economic Feasibility	Traffic Safety	Environmental Sustainability
Accessibility Level	1.00	1.58	0.44	0.46	1.10	0.77	0.72	1.02	0.40	0.44
Land Suitability (Spatial Plan)	1.58	1.00	1.14	0.68	0.73	0.30	0.78	0.55	0.76	0.55
Land Suitability (Road & Route Network)	0.44	1.14	1.00	0.85	1.25	0.73	0.71	0.47	0.25	0.29
Suitability with Activity Centers	0.46	0.68	0.85	1.00	0.52	0.73	0.68	0.48	0.38	0.36
Harmony with Other Activities	1.10	0.73	1.25	0.52	1.00	0.67	0.79	0.54	0.53	0.66
Transport Demand	0.77	0.30	0.73	0.73	0.67	1.00	0.62	0.51	0.45	0.48
Technical Feasibility	0.72	0.78	0.71	0.68	0.79	0.62	1.00	0.95	0.79	0.59
Economic Feasibility	1.02	0.55	0.47	0.48	0.54	0.51	0.95	1.00	0.48	0.71
Traffic and Road Transport Safety	0.40	0.76	0.25	0.38	0.53	0.45	0.79	0.48	1.00	1.68
Environmental Sustainability	0.44	0.55	0.29	0.36	0.66	0.48	0.59	0.71	1.68	1.00

Table 2. Indicator Weight Calculation

Indicator	Accessibility Level	Land Suitability (Spatial Plan)	Land Suitability (Road & Route Network)	Suitability with Activity Centers	Harmony with Other Activities	Transport Demand	Technical Feasibility	Economic Feasibility	Traffic Safety	Environmental Sustainability	Total	Weight
Accessibility Level	0.13	0.20	0.06	0.07	0.14	0.12	0.09	0.15	0.06	0.07	1.09	0.11
Land Suitability (Spatial Plan)	0.20	0.12	0.16	0.11	0.09	0.05	0.10	0.08	0.11	0.08	1.11	0.11
Land Suitability (Road & Route Network)	0.06	1.14	0.14	0.14	0.16	0.12	0.09	0.07	0.04	0.04	1.00	0.10
Suitability with Activity Centers	0.06	0.08	0.12	0.16	0.07	0.12	0.09	0.07	0.06	0.05	0.88	0.09
Harmony with Other Activities	0.14	0.09	0.18	0.08	0.13	0.11	0.10	0.08	0.08	0.10	1.09	0.11
Transport Demand	0.10	0.04	0.10	0.12	0.09	0.16	0.08	0.08	0.07	0.07	0.90	0.09
Technical Feasibility	0.09	0.10	0.10	0.11	0.10	0.10	0.13	0.14	0.12	0.09	1.08	0.11
Economic Feasibility	0.13	0.07	0.07	0.08	0.07	0.08	0.12	0.15	0.07	0.11	0.94	0.09
Traffic and Road Transport Safety	0.05	0.09	0.04	0.06	0.07	0.07	0.10	0.07	0.15	0.25	0.95	0.10
Environmental Sustainability	0.06	0.07	0.04	0.06	0.08	0.08	0.08	0.11	0.25	0.15	0.97	0.10
Total											10	1.00

The resulting indicator weights are subsequently incorporated into the Consistency Ratio (*CR*) calculation matrix to evaluate the consistency of the judgments. The results of this calculation are presented in Table 3 and Table 4.

Table 3. Consistency Ratio (CR) Calculation

λ maks	Total	1.09	1.11	1.00	0.88	1.09	0.90	1.08	0.94	0.95	0.97	11.02
	Weight	0.11	0.11	0.10	0.09	0.11	0.09	0.11	0.09	0.10	0.10	
	Total x Weight	1.20	1.22	1.10	0.97	1.20	0.99	1.19	1.03	1.05	1.07	

Table 4. Consistency Ratio (CR) Calculation

λ maks	11.02
CI = $\frac{\lambda \text{ maks} - n}{n-1}$	0.11
Index Ratio (IR)	1.49
CR = $\frac{CI}{IR}$	0.08

It can be observed from the table above that the result of the *Consistency Ratio (CR)* calculation is 0.08. Since the CR value is ≤ 0.1, it can be concluded that this study meets the consistency test requirement, and the results of the criteria assessment are considered reliable and eligible for use in the subsequent analysis stage.

Assessment of Alternative Locations for the Proposed Development of a Type A Passenger Terminal in Tanjung Selor

The evaluation of alternative locations for the proposed passenger terminal development in Tanjung Selor is conducted for each location based on the established research indicators. The highest score assigned in the assessment is 3, while the lowest is 1. The evaluation is based on data sources, including both secondary data and field survey results.

Table 5. Calculation of Indicator/Element Assessment

No.	Element/Indicator	Assessment Description	Score (1–3)
1	Level of Accessibility for Transport Service Users Criteria: 1. Availability of road networks that accommodate the capacity of vehicles entering and/or exiting the passenger terminal. 2. Availability of adequate public transport services that meet minimum service standards. 3. Location within activity centers and/or major trip generation areas. 4. Location that enables intermodal transfer between transportation modes.	Meets 4 accessibility level criteria	3
		Meets 2-3 accessibility level criteria	2
		Only meets 1 accessibility level criteria	1
2	Land suitability with the Regional Spatial Plan	Land use is designated as a development (cultivation) area	3
		Land use partially overlaps with protected areas	2
		Land use is within a protected area	1
3	Land suitability with road network	Connected to the road network development plan	3

	and route development plans	and located in the inter-city and inter-provincial route network or in the inter-city and inter-provincial route network development plan and/or cross-border transportation.	
		Only located in one location connected to the road network development plan and located in the inter-city inter-provincial route network or in the inter-city inter-provincial route network development plan and/or cross-border transportation.	2
		Neither is in between	1
4	Suitability with activity center development plans	Located within a Regional Activity Center (*PKW*)	3
		Located within a Promoted Regional Activity Center (*PKWP*)	2
		Not located within a Regional Activity Center (*PKW*)	1
5	Harmony and balance with other activities	Does not disrupt other activities and the terminal can operate optimally	3
		Slightly disrupts other activities but the terminal can still operate properly	2
		Disrupts other activities and the terminal cannot operate properly	1
6	Transport demand	Availability of public transport routes with traffic volume (LHR) above 29	3
		Availability of public transport routes with traffic volume (LHR) between 10–28	2
		Availability of public transport routes with traffic volume (LHR) below 10	1
7	Technical feasibility	Flat topography and land available for terminal development	3
		Undulating topography and land available for development	2
		Steep topography and no land available for development	1
8	Economic feasibility	Terminal development provides significant economic benefits for the community and regional development	3
		Terminal development provides moderate economic benefits	2
		Terminal development provides no economic benefits	1
9	Traffic and road transport safety	Location is not in a disaster-prone or accident-prone area	3
		Location is moderately prone to disasters or traffic accidents	2
		Location is highly prone to disasters or traffic accidents	1
10	Environmental sustainability	Terminal development does not cause environmental damage	3
		Terminal development causes minor environmental impact	2
		Terminal development causes environmental damage	1

The evaluation of alternative locations for the proposed development of a Type A passenger terminal in Tanjung Selor is conducted for each alternative based on established assessment indicators. The highest score assigned is 3, while the lowest is 1. The assessment is based on both secondary data and field survey results. The indicators with the highest weights are accessibility level and land-use conformity with the Regional Spatial Plan, followed by technical feasibility. Several indicators share equal weights, reflecting their equal level of importance. It should be noted that the total sum of all indicator weights equals 1.

To determine the priority location among the available alternatives, a scoring process is applied by multiplying the assessment scores by the respective weights of each indicator. The results of the alternative location assessment and scoring for the proposed passenger terminal development in Tanjung Selor are presented in Table 6 and Table 7 below.

Table 6. Assessment of Alternative Locations for the Proposed Development of the Tanjung Selor Passenger Terminal

Indicator	Weight	Tanjung Selor Area, North Kalimantan Locations							
		Point 1 (Jl. Sabanar Lama)	Point 2 (Jl. Sengkawit)	Point 4 (Tanjung Selor Hilir)	Point 5 (Jelarai Selor)	Point 7 (KM 4)	Point 8 (KBM 1)	Point 9 (KBM 2)	Point 10 (Tanjung Palas)
Level of accessibility for transport service users	0.11	3	3	3	3	3	2	3	2
Land suitability with the Regional Spatial Plan	0.11	2	3	3	2	3	2	2	3
Land suitability with road network and route development plans	0.10	3	3	3	3	3	2	3	3
Suitability with activity center development plans	0.09	3	3	3	3	3	3	3	2
Harmony and balance with other activities	0.11	3	3	3	2	2	1	2	2
Transport demand	0.09	3	3	3	3	2	2	1	2
Technical feasibility	0.11	2	3	3	2	2	3	3	3
Economic feasibility	0.09	3	3	3	2	2	3	1	2
Traffic and road transport safety	0.10	2	2	3	3	2	2	3	3
Environmental sustainability	0.10	3	3	3	3	3	2	2	2
Total	1,00	27	29	30	26	25	22	23	24

Table 7. Ranking (Weight × Score) of the Evaluation of Alternative Locations for the Proposed Development of the Tanjung Selor Passenger Terminal

Indicator	Weightt	Tanjung Selor Area, North Kalimantan Locations							
		Point 1 (Jl.	Point 2 (Jl. Sengkawit)	Point 4 (Tanjung	Point 5 (Jelarai	Point 7	Point 8	Point 9	Point 10 (Tanjung

		Sabanar Lama)		Selor Hilir)	Selor)	(KM 4)	(KBM 1)	(KBM 2)	Palas)
Level of accessibility for transport service users	0.11	0.33	0.33	0.33	0.33	0.33	0.22	0.33	0.22
Land suitability with the Regional Spatial Plan	0.11	0.22	0.33	0.33	0.22	0.33	0.22	0.22	0.33
Land suitability with road network and route development plans	0.10	0.30	0.30	0.30	0.30	0.30	0.20	0.30	0.30
Suitability with activity center development plans	0.09	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.18
Harmony and balance with other activities	0.11	0.33	0.33	0.33	0.22	0.22	0.11	0.22	0.22
Transport demand	0.09	0.27	0.27	0.27	0.27	0.18	0.18	0.09	0.18
Technical feasibility	0.11	0.22	0.32	0.32	0.22	0.22	0.32	0.32	0.32
Economic feasibility	0.09	0.28	0.28	0.28	0.19	0.19	0.28	0.09	0.19
Traffic and road transport safety	0.10	0.19	0.19	0.29	0.29	0.19	0.19	0.29	0.29
Environmental sustainability	0.10	0.29	0.29	0.29	0.29	0.29	0.19	0.19	0.19
Total	**1,00**	**2.69**	**2.90**	**3.00**	**2.58**	**2.50**	**2.18**	**2.32**	**2.41**
Rank		**3**	**2**	**1**	**4**	**5**	**8**	**7**	**6**

The ranking results of alternative location assessments for the proposed development of the Tanjung Selor passenger terminal, based on 8 alternative locations in Table 4.29, from the highest to the lowest rank, are as follows:

1. Rank 1 with the highest score of 3.00: alternative location at Point 4, Tanjung Selor Hilir.
2. Rank 2 with a score of 2.90: alternative location at Point 2, Jalan Sengkawit.
3. Rank 3 with a score of 2.69: alternative location at Point 1, Jalan Sabanar Lama.
4. Rank 4 with a score of 2.58: alternative location at Point 5, Jalan Jelarai Selor.
5. Rank 5 with a score of 2.50: alternative location at Point 7, Jalan Ahmad Yani KM 4.
6. Rank 6 with a score of 2.41: alternative location at Point 10, Tanjung Palas.
7. Rank 7 with a score of 2.32: alternative location at Point 9, Kota Baru Mandiri (KBM) 2.
8. Rank 8 with a score of 2.18: alternative location at Point 8, Kota Baru Mandiri (KBM) 1.

Analysis of Transportation Integration and Supporting Facilities in the TOD-Based Area at the Selected Location

Based on the AHP weighting results presented in Table 4.35 (Ranking: Weight × Score of Alternative Location Assessment), Point 4 Tanjung Selor Hilir was selected as the top priority with the highest cumulative score of 3.00. To further strengthen the feasibility of this location as a strategic transportation hub, an advanced

spatial analysis was conducted to assess the potential for intermodal integration and the availability of supporting facilities within a *Transit-Oriented Development (TOD)* framework.

This analysis is based on satellite imagery mapping accessibility distances to other transportation nodes as well as surrounding land-use patterns at the priority location (Point 4, Tanjung Selor Hilir), as illustrated in Figure 1.

Figure 1. Map of Transportation Integration Analysis and TOD Area at the Priority Location

Based on Figure 1 above, the advantages of Point 4 (Tanjung Selor Hilir) can be elaborated through two main aspects as follows:

1. Intermodal Integration (Regional Connectivity)
   Point 4 (Tanjung Selor Hilir), ranked first in the AHP analysis, has a strategic position that enables efficient connectivity with other major transportation nodes in Tanjung Selor, as indicated by Points D-1 and D-2:
   a. Connectivity with Kayan II Port (Point D-1)
      The distance to Kayan II Port is approximately 6 km. Considering the high volume of river transport passengers at Kayan II Port, which reached 298,480 people in the first half of 2024, this distance remains highly suitable for fast feeder transport services. This condition enables the creation of a seamless transfer system from river to land transportation, effectively addressing the issue of disconnected travel chains.
   b. Connectivity with the Airport (Point D-2)
      Point 4 (Tanjung Selor Hilir) is located only 3 km from Tanjung Harapan Airport. This close proximity provides a significant advantage for air–land transport integration. It facilitates the mobility of air passengers who intend to continue their journeys to remote areas or other regencies using shuttle services, thereby strengthening the function of this location as a cross-regional and intercity transport hub.
2. Supporting Facilities within the TOD Area (Density & Environment)
   Point 4 (Tanjung Selor Hilir) is surrounded by supporting facilities that fulfill the core principles of TOD, namely residential density and environmental sustainability, as indicated by Points A-1 to A-4 in Figure 4.27:
   a. Environmental Support (Ecological Support)
      There is a Green Open Space (*Ruang Terbuka Hijau/RTH*) covering approximately 84 hectares (Point A-1) near the location. The presence of this extensive green area provides significant ecological value. In line with TOD principles, the terminal serves not only as a transit point but also as a healthy public space. This green area functions as a buffer zone against air and noise pollution generated by terminal activities, while also enhancing visual comfort and environmental quality for both transport users and nearby residents.

b. Stable Passenger Demand Base (Captive Market)
The presence of civil servant apartment complexes (Points A-2 and A-3) and new residential areas (Point A-4) surrounding the location ensures a consistent demand for transportation services. This concentration of vertical housing and residential developments generates daily travel demand, allowing residents to access the passenger terminal easily and reducing dependence on private vehicles for long-distance travel.

Overall, the integration of proximity to major transportation nodes (airport and port), combined with the support of residential facilities and extensive green open spaces, confirms that Point 4 (Tanjung Selor Hilir) is the most feasible and sustainable location for the development of a Type A Passenger Terminal in Tanjung Selor.

Analysis of TOD Area Accessibility

The accessibility analysis for the top-ranked location, Point 4 (Tanjung Selor Hilir), is further examined using a spatial approach based on the standards of the Institute for Transportation and Development Policy (ITDP) 2017. This analysis employs a double-buffering technique to map the coverage of non-motorized transport modes, namely walking and cycling.

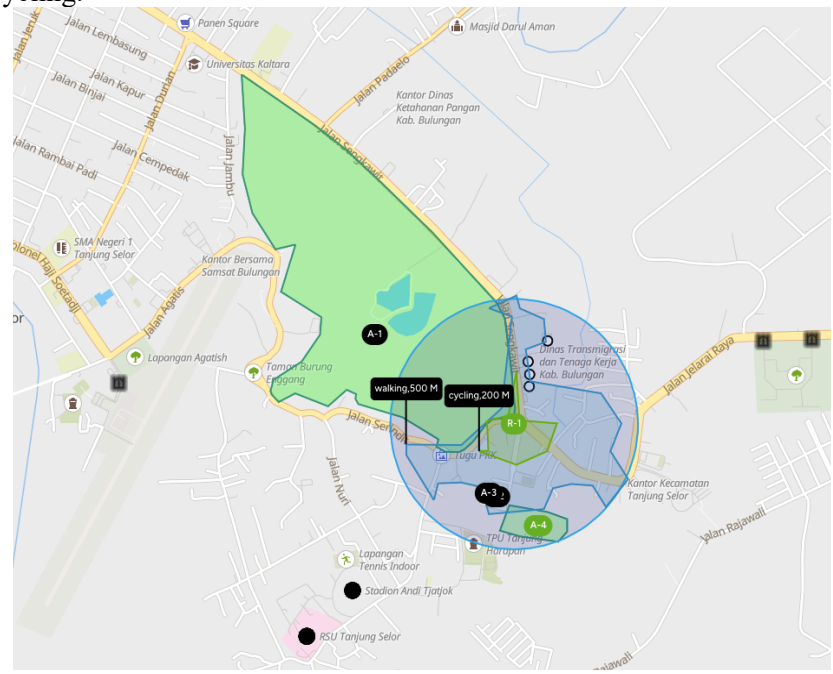

Figure 2. Buffer Analysis Map of Accessibility (Walk & Cycle) at Location Point 4, Tanjung Selor Hilir

Based on the visualization of the analytical map in Figure 2, the elements of area accessibility can be described as follows:

1. Pedestrian Zone (500-Meter Radius)
The blue circle on the map represents a buffer with a 500-meter radius from the central point of the proposed passenger terminal. In accordance with the *Transit-Oriented Development (TOD)* walkability principle, this distance reflects a core area that can be reached by a comfortable walk within approximately 5 to 10 minutes. Within this 500-meter radius, four office locations have been spatially identified along the Jalan Sengkawit corridor. The presence of this office cluster within walking distance is highly strategic, as employees from these institutions represent a potential daily user base. They can access the terminal for commuting purposes without relying on private vehicles or feeder transport, thereby directly contributing to the reduction of traffic congestion on the main arterial road.
2. Cycling Zone (200-Meter Radius)
The 200-meter zone functions as a priority area for micro-mobility circulation. From a technical planning perspective, this area is ideal for the provision of bike-sharing facilities or secure bicycle parking areas. This supports the *TOD* cycling principle, ensuring that access to the terminal from nearby buildings can be achieved through environmentally friendly modes of transport that are more efficient than walking.

CONCLUSION

Based on the results of the study, the following conclusions can be drawn regarding the "Study on Determining the Location for the Development of a Type A Passenger Terminal in Tanjung Selor, North Kalimantan Province":

1. Based on participatory inventory involving stakeholders, 10 (ten) alternative locations were identified. After cross-validation with the Regional Spatial Plan (RTRW) of Bulungan Regency for 2021–2041 and the Regulation of the Minister of Transportation Number 24 of 2021, 8 (eight) locations were declared valid and feasible for further analysis, as they are situated within designated development areas and do not violate protected zones or national strategic assets. Meanwhile, 2 (two) locations did not pass the validation stage, namely Point 3 (Bundayati Urban Forest) and Point 6 (KM 2 Brimob), and were therefore excluded from the priority ranking process.
2. The priority ranking of optimal locations using the Analytical Hierarchy Process (AHP), based on weighted criteria of accessibility, technical aspects, economic factors, and environmental considerations, is as follows:
   a. Primary Priority (Rank 1): Point 4 in Tanjung Selor Hilir (former Public Works workshop site), with the highest cumulative score of 3.00. This location excels in terms of accessibility and spatial planning compatibility.
   b. Rank 2: Point 2 on Sengkawit Street (in front of the Botanical Garden), with a cumulative score of 2.90.
   c. Rank 3: Point 1 on Sabanar Lama Street (in front of Kayan II Port), with a cumulative score of 2.69.
3. The analysis of Transit-Oriented Development (TOD) potential, based on further assessment of the selected location (Point 4, Tanjung Selor Hilir), indicates strong feasibility for TOD implementation, supported by the following indicators:
   a. Intermodal integration: The location has strategic connectivity with major transportation nodes, being approximately 6 km from Kayan II Port (river transport) and 3 km from Tanjung Harapan Airport (air transport), enabling the development of a seamless transportation system.
   b. Accessibility: Buffer analysis shows that within a 500-meter walking radius, the terminal location can serve clusters of government offices and residential areas, while a 200-meter radius strongly supports micro-mobility circulation such as cycling.
   c. Environmental support: The presence of approximately 84 hectares of Green Open Space (RTH) surrounding the area supports environmentally sustainable TOD principles.

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