

Site Feasibility Analysis in the Design of a Coastal Tourism Area in Lembata Regency

Pius Patty Raya Kapuka, Tigor Wilfritz Soadun Panjaitan, Mufidah

17 August 1945 University Surabaya, Indonesia

ABSTRACT

Lembata Regency possesses coastal potential rich in natural beauty, cultural uniqueness, and marine resources that can be developed into coastal tourism areas. However, this potential has not been fully optimized due to the lack of well-directed site planning based on location feasibility. Therefore, conducting a site feasibility analysis is an essential step to ensure that the development of coastal tourism areas can be carried out effectively, safely, and sustainably. This study aims to formulate relevant site feasibility criteria as the foundation for designing coastal tourism areas in Lembata Regency. The research employs a quantitative approach by conducting field surveys, observations of existing conditions, and comparative studies of several similar coastal areas. The analysis assesses physical site characteristics, environmental quality, accessibility, infrastructure readiness, and natural attraction potential. The findings indicate that site feasibility is strongly influenced by stable soil conditions, well-preserved environmental quality, ease of access to the location, and the availability of supporting facilities surrounding the area. In addition, visual character and natural recreational potential serve as important factors in enhancing tourism appeal. These results are expected to serve as a foundation for designing more strategic and sustainable coastal tourism areas that can improve visitor experience.

Keywords: *Accessibility; Infrastructure; Site Feasibility; Coastal Area; Coastal Tourism.*

Corresponding author

Name: Pius Patty Raya Kapuka

Email: 1442200032@surel.untag-sby.ac.id

INTRODUCTION

Lembata Regency is an archipelagic region with significant coastal potential, ranging from the natural beauty of its beaches and the uniqueness of its marine ecosystems to the rich culture of its coastal communities. This potential makes the coastal areas of Lembata a strategic sector with strong prospects for development as beach tourism destinations. The development of coastal tourism not only has the capacity to enhance the regional economy but also encourages environmental conservation and strengthens local identity. However, the utilization of coastal tourism areas in Lembata has not yet been optimal. This is due to the absence of comprehensive site planning and the limited feasibility studies used as a basis for tourism area development. Without appropriate site selection,

tourism development may lead to various problems, such as environmental degradation, limited accessibility, lack of supporting infrastructure, and low visitor comfort.

In the Long-Term Regional Development Plan (RPJPD) of Lembata Regency for 2025–2045, the development of the tourism sector—particularly marine and coastal tourism—is identified as one of the long-term development directions expected to enhance regional competitiveness, strengthen territorial potential, and promote sustainable economic growth. This highlights that proper site planning is a crucial component in achieving these development goals.

Site feasibility analysis is an essential step to ensure that the selected location aligns with functional requirements, environmental conditions, and sustainable development principles. Evaluations of physical site aspects, environmental quality, accessibility, infrastructure availability, and natural attraction potential are necessary to ensure that the planning process of coastal tourism areas is well-directed and effective. In determining the most suitable location among several selected alternatives, a scoring-based selection method is required. The relationship between location selection criteria and the available alternatives is analyzed using a selection matrix (Febrianto et al., 2024; Putra & Istijanto, 2026).

METHOD

In the site selection analysis, there are three main stages:

1. Site selection at the regency/city scale
The site selection is located in Lembata Regency, which has significant potential for coastal tourism attractions.
2. Site selection at the district scale
Based on the Long-Term Regional Development Plan (RPJPD) of Lembata Regency 2025–2045, the realization of tourism areas is located in Nubatukan District.
3. Selection of alternative sites within the district
Lembata District has two well-known beach tourism destinations, namely Wewanbelen Beach and Wulen Luo Beach.

Final Results of Site Selection Scoring :

Table 1: Site Selection Scoring Table

NO	Site Selection Scoring Table	Score
1	Natural attraction & beach scenery	20%
2	Soil condition (stable, non-erosive, disaster-safe)	20%
3	Good accessibility, close to Lewoleba city center	15%
4	Availability of basic infrastructure (roads, water, electricity, communication)	15%
5	Land-use suitability	15%
6	Economic potential & welfare improvement	15%
TOTAL		100%

Source: Personal Analysis

FINDING AND DISCUSSION

General overview

Site planning, according to (Supriyanto, 2018), is the art of organizing both the built environment and the natural environment to support human activities. The explanation of the layout or design of a place is based on two interrelated factors, namely natural environmental factors and built environmental factors (Andarwati et al., 2024).

The selection of land or site location is a very important aspect that enables analysis of existing conditions and situations (Gesang et al., 2025). A site is a crucial element in designing a tourism area. Therefore, selecting the right site must be carefully considered to ensure that the development of coastal tourism areas can proceed effectively and sustainably. The following are several criteria for site selection in Lembata Regency:

1. The selected site is located in a coastal area with natural attractions and beach scenery that can support marine tourism activities.
2. The site has stable soil conditions, is not prone to erosion, and is safe from various natural disaster risks.
3. The site is easily accessible, reachable by public or private transportation, and located close to the Lewoleba city center.
4. The site has adequate basic infrastructure such as roads, clean water, electricity, and communication networks.
5. The site is located in an area that aligns with spatial planning regulations and receives support from local communities and government.

The Main Program Indication of the Regional Spatial Plan (RTRW) of Lembata Regency 2023–2042 is the realization of tourism areas located throughout the Nubatukan District.

Site selection analysis

Based on the site selection criteria above, there are several alternative beach locations within Nubatukan District:

1. Alternative Site 1

The first location is Wewanbelen Beach, located in Waijarang Village, Nubatukan District, Lembata Regency, East Nusa Tenggara. This beach features a wide stretch of white sand. The distance from the city center to this location is approximately 16 minutes or 10.8 km.

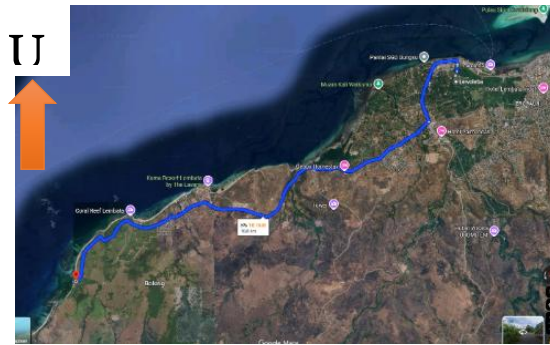


Figure 1: Alternative Site 1

The site is located in the Wewanbelen Beach Tourism Area, Waijarang Village, Nubatukan District, Lembata Regency, East Nusa Tenggara. It has a land area of approximately 0.32 hectares, with an access road width of about 7 meters.

- Supporting Environmental Facilities

The nearest supporting basic facilities for this beach are located in Waijarang Village. The distance from the beach to Waijarang Village is approximately 2.7 km, which can be reached in about 4 minutes.

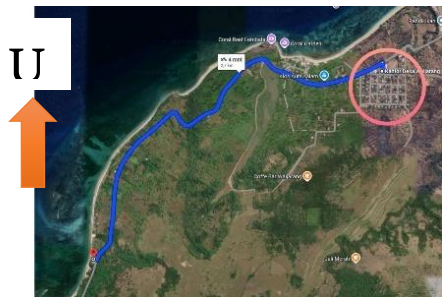


Figure 2: Distance from the Beach to Waijarang Village

- Center of Activity

Alternative Site 1 is located on the edge of a forest, making the site conditions very quiet and relatively isolated. be reached in about 4 minutes.



Figure 3: Activity Condition of Alternative Site 1

- Site Attraction

The first site features white sand, and in the afternoon, visitors can enjoy the sunset. This gives Site 1 a fairly strong visual and experiential appeal.



Figure 4: Attraction of Alternative Site 1

- Accessibility

The site has very good accessibility, as it is located along the main road, namely Jl. Trans Balauring.



Figure 5: Accessibility of Alternative Site 1

- Utility Conditions

The utility conditions at Site 1 are fairly good, as the area is already served by an electricity line. However, electricity has not yet been distributed within the site, causing the beach to appear dark in the late afternoon and evening. The water supply at the site still relies on a bore well, which is stored in a reservoir tank and then distributed to bathrooms or toilet facilities.



Figure 6: Utilities of Alternative Site 1

2. Alternative Site 2

Wulen Luo Beach Tourism Area is located on Jl. Trans Lembata, North Lewoleba, Nubatukan District, Lembata Regency, East Nusa Tenggara. This beach is situated in the center of Lewoleba City, allowing visitors to access it at any time—morning, afternoon, evening, or night. The beach is located near Lewoleba Port, enabling visitors to enjoy sea views while watching ships passing through the waters. In addition, within the site there is a road approximately 10 meters wide, which is used by visitors for jogging, as the entire stretch is free from vehicle traffic.



Figure 7: Alternative Site 2

The site is located at Wulen Luo Beach Tourism Area on Jl. Trans Lembata, Nubatukan District, Lembata Regency, East Nusa Tenggara. It has a land area of approximately 3.24 hectares, with a road width of about 9 meters.

- Supporting Environmental Facilities

The alternative Site 2 is located in the city center, making it easier and faster for visitors to access supporting facilities available in the urban area.



Figure 8: Supporting Facilities of Alternative Site 2

Supporting facilities around Alternative Site 2 include Lewoleba Seaport, which is directly adjacent to the site on the eastern side, as well as a traditional market within a radius of 1.7 km. Other nearby facilities include Hotel Olympic Lewoleba at a distance of 1.3 km, commercial/shopping areas within 1.5 km, a fish market within

3.5 km, Wunopito Airport Lewoleba at 5.2 km, and the Lewoleba Regional Public Hospital (RSUD) at a distance of 7.6 km.

- Center of Activity

Alternative Site 2 is located along the Trans Balauring Road, which is directly connected to the city center from the western area. In addition, this road also provides direct access to the seaport, making Alternative Site 2 relatively busy and active.



Figure 9: Activity Condition of Alternative Site 2

- Site Attraction

This beach is located near Lewoleba Seaport, allowing visitors to enjoy sea views while watching ships passing through the waters. This creates a unique attraction for visitors.



Figure 10: Attraction of Alternative Site 2

- Accessibility

The site has very good accessibility, as it is located along the main road, namely Jl. Trans Lembata.



Figure 11: Accessibility of Alternative Site 2

- Utility Conditions

The utility conditions at Site 2 are very good, as the area is already served by an electricity network, making the beach well-lit at night. In addition, a municipal water supply (PDAM) system is available in this area due to its location in the city center.



Figure 12: Utilities of Alternative Site 2

Site selection scoring

No.	Aspek Penilaian	Nilai	Bobot Alternatif 1			NxB	Bobot Alternatif 2			NxB
			1	2	3		1	2	3	
1	Daya tarik alam & keindahan pantai	20%			√	0,6			√	0,6
2	Kondisi tanah stabil, tidak mudah erosi, aman bencana	20%		√		0,4		√		0,4
3	Aksesibilitas baik, dekat pusat kota Lewoleba	15%	√			0,15			√	0,45
4	Memiliki fasilitas dasar (jalan, air, listrik, komunikasi)	15%		√		0,3			√	0,45
5	Sesuai Peruntukan Lahan	15%			√	0,45			√	0,45
6	Potensi ekonomi & peningkatan kesejahteraan	15%		√		0,3			√	0,45
TOTAL		100%				2,7				2,8

Figure 13: Results of Alternative Site Selection Scoring

CONCLUSION

Based on the site feasibility analysis process, which includes theoretical studies, a review of the Lembata Regency Long-Term Regional Development Plan (RPJPD) 2025–2045, field surveys, and scoring based on several assessment criteria, the results indicate that Wulen Luo Beach is the most suitable location to be developed as a coastal tourism area. The assessment considers aspects such as accessibility, physical site conditions,

environmental quality, infrastructure readiness, natural attraction potential, and its alignment with district-level development directions and regional development priorities.

Wulen Luo Beach achieved the highest score in the evaluation. This is due to its stable site conditions, attractive natural potential, easy accessibility, and relatively preserved coastal environment. In addition, this location aligns with the long-term development vision outlined in the RPJPD, particularly in promoting marine tourism, enhancing equitable development, and optimizing coastal areas as leading destinations.

Therefore, Wulen Luo Beach is selected as it meets all feasibility criteria and has significant potential to be developed into a competitive and sustainable coastal tourism area that can contribute to improving the welfare of the community in Lembata Regency.

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