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ANALYSIS OF THE NEEDS FOR INFRASTRUCTURE FACILITIES IN THE TUMBURANO WATERFALL TOURISM AREA, KONAWE ISLANDS REGENCY

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ABSTRACT

This study aims to determine and analyze availability means And infrastructure in area tour Water Fall Tumburano Regency Konawe Island. Study this is study descriptive quantitative with use sample as much 85 respondent. Data collected with questionnaire And analyzed with use Analysis descriptive statistics to present and explain the need for facilities and infrastructure in object tour Water Fall Tumburano. And analysis need means And infrastructure in object tour Water Fall Tumburano use analysis presentation. Results study show that availability means And basic infrastructure in the Tumburano waterfall tourist area is in moderate condition. From results the need developed And provided infrastructure For meet the needs of tourists and the local community. Priority needs means And infrastructure tour water plunge Tumburano is network road, waste bin drainage and availability of clean water that has not been used with Good so that traveler And public around can activity with comfortable on tour water plunge Tumburano.

KEYWORDS: Need Means And Infrastructure Tour Water Fall

1. INTRODUCTION

The development of the Tumburano Waterfall Natural Tourism Object is expected to be used as an alternative beach tourism destination in the Konawe Islands Regency and is expected to become a new growth center for urban tourism development and become a landmark that is a tourist destination for the Konawe Islands area itself and regionally. Efforts to arrange and develop Tumburano Waterfall Nature Tourism Objects through the Preparation of Detailed Engineering Design (DED) for Tumburano Waterfall Nature Tourism is a breakthrough for tourism development in Konawe Islands Regency. Apart from being expected to improve the socio-economic life of the surrounding community and increase Regional Original Income (PAD) for Konawe Islands Regency, this development is also expected to increase development in multi-sectors, including the industrial sector by marketing small industrial products, artisanal crafts industries.

The phenomenon of the availability of infrastructure at this tourist attraction shows the need to provide infrastructure needs that can later be utilized by the community in the future. The potential for the development of infrastructure facilities is an important part of tourist attractions so that infrastructure continues to be built to meet the needs of tourists in the future.

Existing facilities and infrastructure in tourist areas should be able to create tourist satisfaction. Facilities and infrastructure can be one of the supports so that tourist attractions in this area are in demand by tourists. Because if the facilities and infrastructure are not well developed it will result in reduced tourist interest in visiting. The tourism sector is one of the development sectors that is able to raise the dignity of the nation by prospering local communities if managed properly.

The arrangement and development of Tumburano Waterfall Nature Tourism is of course with the consideration of having suitable characteristics and attractiveness as a natural recreation for Konawe Islands Regency and is expected to be able to reflect the image of Tumburano Waterfall Nature Tourism as a mainstay tourism object for Konawe Islands Regency. The number of tourists at the end of 2021 has increased both from local and domestic tourists.

The potentials that exist in the Tumburano Waterfall Nature tourism area, presumably need to be rearranged by providing various kinds of facilities that can support tourism activities, providing easy means of reaching between functions, and utilizing the natural surroundings of the object for further design. The existence of the potential above is endeavored to attract tourists to visit the place, so that the area can develop in the economic field and also increase regional original income in the Konawe Islands Regency. However, the current conditions show that the facilities and infrastructure in the Tumburano Waterfall Tourism Area are inadequate.

2. LITERATURE REVIEW

2.1 REGIONAL PLANNING

Regional planning is a development planning process that is intended to make changes towards a better development direction for a community, government and environment in a certain area by utilizing or utilizing various Journal microdata, management and economic 13/4/2025: 0.14 WITA existing resources and must have an orientation that is comprehensive, complete, adheres to on the principle of priority (Riyadi and Bratakusumah, 2003).

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Regional planning is the only open way to increase per capita income, reduce income inequality and increase employment opportunities (Jhingan, 2000). Regional Development Planning is a systematic effort of various actors, both general (public) or government, private, or other community groups at different levels to deal with the interdependence and interrelationships of physical, social, economic and other environmental aspects with method:

a. Continuously analyzing and implementing regional development
b. Formulate regional development goals and policies
c. Develop strategic concepts for problem solving (solutions)
d. Do it by using available resources so that new opportunities to improve the welfare of local communities can be captured in a sustainable manner (Solihin, 2005).

2.2 AREA DEVELOPMENT

Basically development is a process by which individuals, groups, organizations, instruction and society increase their ability to:

1. Carry out main functions, solve problems, determine and achieve goals;
2. Understanding and relating their development needs in a broad context and in a sustainable way (Sinaga, 2006).

Region as a geographical unit has the potential to carry out development activities and regional development. And a region is also a geographic unit that forms a unit. The definition of a geographical unit is space so that it is not only a physical aspect of the land, but more than that includes other aspects such as economic, biological, social and cultural (Sinaga, 2006).

According to Sirojuzilam (2005), regional development is an increase in the value of regional benefits for the people of a particular area, as well as accommodating more residents, with an average level of community welfare improving, besides showing more facilities/infrastructure, goods or services available and activities increased community efforts, both in terms of type, intensity, services and quality. Meanwhile, according to Mishra (2006), regional development is supported by four pillars (a tetraploid discipline), namely geography, economics, urban planning and location theory.

According to Mishra (2006), the development of this area is too simple. The biogeophysical aspect is only represented by geography or location theory. Therefore, according to Budiharsono (2006), regional development needs to be supported at least by 6 pillar aspects, namely (1) biogeo-physics aspects; (2) economic aspects; (3) Socio-cultural aspects; (4) institutional aspects; (5) Aspects of location and; (6) Environmental aspects.

Based on Fig. 2.2, can be seen various analyzes that can be carried out on regional development, namely biogeophysical aspects including the content of biological resources, non-biological resources, services as well as facilities and infrastructure in the region. While the economic aspect includes economic activities that occur around the area. Social aspects include culture, politics, and defense and security which are the development of the quality of human resources, bargaining position (in the political field), community culture and defense and security.

The location aspect shows the relationship between one region and another related to production facilities, management and marketing. The environmental aspect includes the study of how the production process takes input whether it is damaging or not.

Institutional aspects include existing community institutions in the management of an area whether they are conducive or not. Institutions also include the applicable laws and regulations from both the central government and regional governments as well as socio-economic institutions in the region.

2.3 TOURISM FACILITIES AND INFRASTRUCTURE

According to the Government Regulation of the Republic of Indonesia Number 50 of 2011 concerning the 2010-2025 National Tourism Development Master Plan article 1 paragraph 12 Tourism facilities are all types of facilities specifically intended to support the creation of convenience, comfort, safety of tourists in visiting tourism destinations, facilities tourism includes: accommodation facilities, restaurants, tourism information and services, immigration services, tourism information centers (tourism information center). Tourism police and tourism task force, souvenir shops, direction signs/tourist information boards/tourist traffic signs and landscape forms.

According to Sinarta (2010) Tourism Facilities are all the completeness of tourist destinations needed to serve the needs of tourists in enjoying their tourism trips, which consist of companies that provide services to tourists, both directly and indirectly and whose lives depend a lot on tourist arrivals. Infrastructure is all facilities that enable economic processes to run smoothly, making it easier for tourists to meet their needs. As we know that tourism facilities are divided into 3 parts, namely the main tourism facilities, tourism complementary facilities, and tourism supporting facilities.

1. Basic tourism facilities (main tourism superstructure) are facilities that function to provide basic facilities that can provide services for tourist arrivals.
2. Supplementing tourism superstructure is a company that provides recreational facilities whose function is to complement the main tourism facilities and enable tourists to stay longer in a tourist destination they visit.

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3. Tourism supporting facilities (supporting tourism superstructure) are companies that support basic facilities and complementary facilities, whose function is not only to make tourists stay longer in a tourist destination, but also to make tourists spend more money in the places they visit.

The infrastructure group is divided into 3 parts, namely public infrastructure, basic needs for a modern lifestyle, tourism infrastructure.

a. Public infrastructure, namely infrastructure that concerns the needs of the general public for their economy and includes the supply system: Clean water, electricity, traffic lanes, sewage systems, telecommunications systems. b. Modern lifestyle needs such as hospitals, pharmacies, shopping centers, government offices and gas stations. c. Tourism infrastructure includes lodging places, tourist information places, information and promotion offices known as tourist information centers (TIC), recreation and sports places, supporting transportation facilities.

2.4 TOURISM CONCEPT

Tourism is a multi-complex system with various aspects that are interrelated and influence each other and in recent decades. Tourism has become a driving force for community dynamics, and one of the prime movers in socio-cultural change (Pitana and Gayatri, 2007).

Tourism is a travel activity carried out by a person or group of people by visiting certain places for recreational purposes, personal development, or studying the uniqueness of the tourist attractions visited in a temporary period. Tourism is a variety of tourism activities and is supported by various facilities and services provided by the community, businessmen, government and local government. A tourist attraction is anything that has uniqueness, beauty and value in the form of a diversity of natural, cultural and man-made assets that are the target or destination of tourist visits (RI Law No. 10 Th. 2009). Tours can be done on beaches, mountains or valleys, such as on the Tangkil Island tourist attraction which can be a tourist destination because it offers beautiful beaches and attractive islands.

A tourist object is an embodiment of human creation, the way of life, art, culture and history of the nation and places or natural conditions created by God that have an attraction visited by tourists. Objects and tourist attractions can be classified into two, namely objects or objects of historical heritage (heritage) and cultural arts that are still alive (living culture). Cultural tourism objects can be in the form of buildings with distinctive architects or heritage while arts and culture can be in the form of arts, attitudes of people's behavior or customs (Fandeli, 2002). According to PP RI No. 67th. 1996 A tourist object is a tourist destination that has a dominant physical element, which is interesting to visit, this is different from a tourist attraction which is a tourist target that has a dominant abstract element, which is interesting for tourists to visit. The tourist object in this study is the tourist attraction of Tangkil Island which is relatively newly developed and not widely known by the public.

A tourist is someone who is driven by something or several needs to travel and stop temporarily outside their place of residence for a period of more than 24 hours with no intention of making a living (Fandeli, 2000). The characteristics of a person called a tourist according to Law no. 9 of 1990 concerning tourism is travel made voluntarily, travel to other places outside the region/country of residence, is temporary and stays at least one night, not to make a living, the purpose is solely for excursions, holidays, health, religion and sports, business visits, visiting family, assignments and attending meetings.

2.5 TOURISM INFRASTRUCTURE

One indicator in the development of tourism facilities and infrastructure. In Lothar A. Kreckyeoti in Agusbushro et al (2014) tourism development there are several standards that serve as an assessment of the feasibility of an area as a tourism destination including tourism facilities and infrastructure

According to Agusbushro (2014) the availability of facilities and infrastructure such as roads, clean water, electricity and telecommunications. The problem that is often faced related to facilities and infrastructure is accessibility to natural tourist objects, many of which are still damaged, tourist sites that are far inland or located at high altitudes. Road infrastructure is damaged, making it difficult for visitors to reach tourist sites, besides road infrastructure for the development of tourist objects requires electricity, clean water and telecommunications whose availability is still limited and difficult to access. (Sastrayuda, 2010)

Service support facilities for tourists such as public facilities (toilets), transportation facilities, restaurants, and information rooms located at agro-tourism locations. Tourism facilities can be in the form of restaurants, places to stay and others so as to make it easier for tourists to obtain food and drinks when visiting agro-tourism objects. the tour. Agro-tourism managers need to provide recreational facilities for children which are a combination of good facilities so that the needs of parents/adults can be met in a balance with the needs of children. Tourism object managers are expected to be able to provide as much as possible the needs of facilities and infrastructure at tourist attractions so that tourists feel at home and are well served to all groups and types of tourists.

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3. RESEARCH METHODS

3.1 LOCATION AND TIME OF RESEARCH

This research was conducted in the Konawe Islands Regency entitled Analysis of Facilities and Infrastructure Needs at the Tumburano Waterfall Tourism Object which is located in the village of Tumburano.

3.2 DATA COLLECTION TECHNIQUES

The data needed to answer the problems in this study were obtained using several data collection techniques, such as:

a. Interview,
b. Observation,
c. Documentation,

3.3. DATA ANALYSIS TECHNIQUE

To answer the problems in this study, the analysis tool that will be used is the analysis of:

1. Statistical descriptive analysis to present and explain the availability of facilities and infrastructure at the Tumburano Waterfall tourist attraction.
2. Percentage analysis is used to measure respondents' responses to the availability of facilities and infrastructure at the Tumburano Waterfall tourist attraction.
3. Analysis of the needs for facilities and infrastructure at the Tumburano Waterfall tourist attraction uses presentation analysis.

4. RESEARCH RESULT

4.1 INFRASTRUCTURE NEEDS ANALYSIS

4.1.1 VISITOR PROJECT ANALYSIS

Tourist visitors in this study are tourists who visit the Tumburano Waterfall tourist attraction. These activities carried out by tourists have increased the volume of visits in the last 3 years from the 2020-2022 period. Predicted visitor conditions for the next 5 years can be analyzed using the 2021 base year, with data as in the following table:

Table 1. Development of Visitors to the Tumburano Waterfall Tourism Object

No.	Month	Number of Visitors in 2019	Number of Visitors in 2020	Number of Visitors in 2021
1	January	237	120	128
2	February	216	128	130
3	March	123	131	141
4	April	159	145	157
5	May	116	158	176
6	June	120	163	176
7	July	126	179	193
8	August	132	204	224
9	September	149	215	234
10	October	118	248	269
11	November	209	198	224
12	December	226	269	290
	Amount	1931	2.158	2,342

Source: Processed data (2022)

The data in Table 5.23 shows that the number of visitors to Tumburano Waterfall in 2019-2021 has increased. With this basic data, it can be projected in 2027 based on visitor data in 2020-2022 with the equation:

$$P_n = P_0(1 + r)^n$$

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$$P_0 = 2{,}342 \text{ people.}$$

$$P_n = \text{Number of Visitors in 2020} r = 2{,}84\% \text{ or } 0.0284$$

$$n = 5 \text{ years}$$

$$t = (2022 - 2027) = 5$$

$$P_n = 2.342(1 + 0{,}0284)^5$$

$$\frac{P}{(P) - 1}$$

$$2.342$$

$$\frac{P_n}{S} = 2{,}694 \text{ Person}$$

$$r = \frac{2.158}{3} = 0{,}0284$$

$$n$$

Based on the results of the analysis above, the following is obtained:

Table 2. Projection of tourism visitors for the next 5 years

No.	Year	Po (Person)	r	(1+r)^n	Supporting Projection (Pn)
1.	2023	2,342	0.0284	1.0284	2,409
2.	2024	2,342	0.0284	1.0577	2,477
3.	2025	2,342	0.0284	1.0877	2,547
4.	2026	2,342	0.0284	1.1186	2,620
5	2027	2,342	0.0284	1.1504	2,694

The results of this analysis show that the prediction of tourists in 2027 is to reach 2,694 people. This has an impact on the provision of roads, gazebos, guard posts, and other infrastructure. The increase in visitors in 2027 indicates that the need for infrastructure will increase so that it is necessary to develop infrastructure at the Tumburano Waterfall tour in the future.

$$N = \text{number of vehicles or parking capacity} L = \text{available parking area}$$

$$P = \text{SRP for four-wheeled vehicles (2.50 m x 5.00 m)}$$

$$= \text{SRP for motorbikes (0.75m x 2.00m)}$$

The results of the research are obtained as follows:

4.1.2 CAR VEHICLE PARKING CAPACITY

$$N = 20 \times 20 = 400 = 32 \text{ units}$$

$$\frac{12{,}5}{(2{,}5 \times 5)}$$

4.1.3 ANALYSIS OF PARKING NEEDS

The Tumburano Waterfall consist of 4-wheeled and 2-wheeled vehicles : The parking capacity for vehicles is used by the equation:

$$N = \frac{L}{P}$$

Where:

The zone 1 parking area in Tumburano Waterfall can accommodate 32 units of four-wheeled vehicles. Vehicle data in 2019-2022 that use the Tumburano Waterfall tourist area is presented in the following table :

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Table 3. Ronda 4 Vehicles Using Parking Facilities

No.	Year	Vehicle (Y)	X	Y²	X²	XY
1	2019	516	-2	266,256	4	-1,032
2	2020	514	-1	264,196	1	-514
3	2021	531	1	281,961	1	531
4	2022	546	2	298,116	4	1,091
	Amount		0	1,110,529	10	77

Source: Processed data (2022)

Information

Y = Car vehicle data in 4 early years 2019-2022

X = Pre- Dictor n = year period

The formula for forecasting the number of vehicles for 5 years is obtained using a simple regression analysis as follows;

$$Y = a + bX$$

$$a = \frac{(\sum Y)(X^2) - (\sum X)(\sum XY)}{n\sum X^2 - (\sum X)^2} = \frac{(2.107)(10) - (0.77)(21.070)}{40 - 0} = 527$$

While the area required is as follows: W = P x N

L = Land Area

P = SRP (2.50 x 5.0) = 12.5

N = Number of vehicles in year X L (2023) = 12.5 x 535 = 6688 m²

L (2023) = 12.5 x 543 = 6788 m²

L (2023) = 12.5 x 551 = 6888 m²

L (2023) = 12.5 x 559 = 6988 m²

L (2023) = 12.5 x 567 = 7088 m²

The required land area in 2027 is 7,088 m²

4.1.4 MOTORCYCLE VEHICLE PARKING CAPACITY

$$b = \frac{(n\sum YX) - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{308 - 0}{40} = 8$$

$$N = \frac{10 \times 20}{200} = 133 \text{ units}$$

The vehicle projections for the next 5 years

$$(0{,}75 \times 2) = 1{,}5$$

The vehicle projections for the next 5 years are presented as follows:

$$Y(2023) = a + (b(1)) = 527 + 8(1) = 535$$

$$Y(2024) = a + (b(2)) = 527 + 8(2) = 543$$

$$Y(2025) = a + (b(3)) = 527 + 8(3) = 551$$

$$Y(2026) = a + (b(4)) = 527 + 8(4) = 559$$

$$Y(2027) = a + (b(5)) = 527 + 8(5) = 567$$

Thus the zone 2 parking area available for 2-wheeled vehicles in the Tumburano Waterfall tourist area can accommodate 133 motorbikes. The number of 2-wheeled vehicles visiting Tumburano Waterfall is presented in the following table

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Table 4. Wheeled vehicles that visit the Tumburano Waterfall area

No.	Year	Vehicle (Y)	X	Y 2	X 2	XY
1	2019	832	-2	692,224	4	1,664
2	2020	830	-1	688,900	1	830
3	2021	856	1	732,736	1	856
4	2022	882	2	777,924	4	1,764
	Amount	3,400	0	2,891,784	10	126

Source: Processed data (2022)

Information

Y = Motorcycle vehicle data in the first 4 years 2019-2022

X = Pre- Dictor n = year period

The formula for forecasting the number of vehicles for 5 years is obtained using a simple regression analysis as follows;

$$Y = a + bX$$

$$a = \frac{(\sum Y)(n^2) - (\sum X)(\sum XY)}{n\sum X^2 - (\sum X)^2}$$

$$(34.000)(10) - (123) = 34.000 = 850$$

$$40 - 040$$

$$L(2023) = 1.5 \times 888 = 1332 \text{ m}^2$$

$$L(2023) = 1.5 \times 900 = 1351 \text{ m}^2$$

$$L(2023) = 1.5 \times 913 = 1370 \text{ m}^2$$

The required land area in 2027 is 1,370 m²

4.1.5 ANALYSIS OF NEEDS FOR SINGA HOUSES (GAZEBOS)

Gasebo is a halfway house in a tourist area. The number of gazebos currently available is 3 units with a capacity of 50 people, which means the gazebo can only accommodate 150.

Visitors in 2020-2022 show an increase. The use of the gazebo in the tourist area of

$$b = \frac{(n\sum YX) - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = 504 - 0 = 13$$

The vehicle projections for the next 5 years are presented as follows:

$$Y(2023) = a + (b(1) = 850 + 13(1) = 863$$

$$Y(2024) = a + (b(2) = 850 + 13(2) = 875$$

$$Y(2025) = a + (b(3) = 850 + 13(3) = 888$$

$$Y(2026) = a + (b(4) = 850 + 13(4) = 900$$

$$Y(2027) = a + (b(5) = 850 + 13(5) = 913$$

While the area required is as follows: W = P × N

$$L = \text{Land Area}$$

$$P = \text{SRP}(0.75 \times 2.0) = 1.5$$

$$N = \text{Number of vehicles in year } X \times L(2023) = 1.5 \times 863 = 1294 \text{ m}^2$$

$$L(2023) = 1.5 \times 875 = 1{,}313 \text{ m}^2$$

Tumburano Waterfall. The results of the analysis show that there are visitors who cannot use the gazebo properly, in 2020 an average of 111 visitors cannot use the gazebo facilities. In 2021, an average of 130 visitors cannot use the gazebo facilities. In 2022 an average of 145 visitors cannot use the gazebo facilities. This indicates the need for a gazebo in the tourist area

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of Tumburano Waterfall. The projected results of visitors in the future are 2,694. Then the number of gazebos that must be provided in the future is as follows:

$$Go = \frac{Pn}{n}$$

Go = Gazebo Requirement

Pn = Visitors

n = gazebo capacity

Table 5. Gazebo Needs in Tumburano Waterfall Tourism

Year	Visitors (Pn) (Person)	Gazebo Capacity (Person)	Used Gazebo (Person)	Remaining Visitors Who Do Not Use Gazebo (people)	Gazebo Requirement (Unit)
2023	2,409	50	150	2,259	45
2024	2,477	50	150	2,327	47
2025	2,547	50	150	2,397	48
2026	2,620	50	150	2,470	49
2027	2,694	50	150	2,544	51

Source: Processed data (2022)

Table 5.29 shows that the need for Gazebos in the Tumburano Waterfall tour in 2027 is 51 units. This shows that the number of visitors in 2027 was 2,694 and accommodated in 3 gazebos of 50 people each so that in 1 year it could only be used by 150 people while in 2027, the required gazebo reached 51 units to be able to meet the needs of visitors to the Tumburano Waterfall tour in the future.

4.1.6 ANALYSIS OF NEEDS FOR DOOR GUARD POST

The guard post is a small house to be occupied by door guards who have always been the control center for tourist visits at the Tumburano waterfall tour. Its existence relates to the position of the placement of the security unit which is carried out to serve the community who use the Tumburano Waterfall tourism service. The assessment of the measuring parameters set at the boat moorings is at a value of 3. The existence of a guard post at the entrance to the Tumburano Waterfall tour is 3 and is in the range of a scale of 3 with good criteria. This result places the guard post as one of the good facilities in the tourist area of Tumburano Waterfall. Analysis of the existence of the guard post obtained a good situation meaning that the existence of the guard post could be used properly. The results of the analysis of the function of the guard post show that the function of the post is already optimal, so there is no need for additional guard posts.

4.1.7 ANALYSIS OF BATHROOM AND WC NEEDS

Based on the results of visitor projections for the next 5 years, the need for bathrooms and toilets in the coming year from 2023 to 2027 is to be able to meet visitor needs. Based on the results of research conducted in tourist areas, it was found that tourist visitor needed bathrooms and toilets. The need for bathrooms and toilets is part of the needs of visitors as shown in the following table:

Table 6. Projection of Needs for Bathrooms and Toilets in 2023-2027

Year	Visitors (Pn) (Person)	Hours of Use of Bathroom/WC/Hours	KM/WC Available	KM / WC users	Visitors who cannot use KM/WC	Required KM / WC
2023	2,409	0.25	3	188	2070	11
2024	2,477	0.25	3	194	2,133	11
2025	2,547	0.25	3	200	2,197	11
2026	2,620	0.25	3	206	2,264	11
2027	2,694	0.25	3	212	2,332	11

Source: Processed data (2022)

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Table 5.32 shows that the need for bathrooms and toilets for the coming years is a projection of the number of visitors, hours of using the bathrooms and toilets for 0.25 hours or 15 minutes, and the number of bathrooms and toilets available and must be provided in the future is 11 bathrooms.

4.1.8 ROAD NEEDS ANALYSIS

Based on existing guidelines, if > 10% of the level of damage to the road surface is damaged, a score of 1 is given. The results show that there are no asphalt roads or paving blocks. The road is in a damaged condition, so the score given is 1. The weighting level of the availability of road infrastructure at the location this research can be seen in the following table:

Table 7. Road Availability Level

no	Parameter	criteria	Mark
1	Long road	Bad	1
2	Road surface layer	Bad	1
3	Road damage level	Bad	1
	Amount		3
	Average		1

From the table it can be seen that the total value of the level of availability of road infrastructure is 4 with an average of 2 which is obtained by :

$$\text{Average level of availability: } = \frac{\text{total nilai parameter}}{\text{jumlah parameter}}$$

Average level of availability :

3 results of the analysis show that the drainage length is 181% of the current drainage length and gets a score of 5. This score indicates that drainage is provided for waterways so that water does not stagnate in certain places.

Average level of availability :

$$= \frac{\text{total nilai parameter}}{3} = 1$$

Based on these results it can be

jumlah parameter

Average level of availability :

seen that the average level of availability of road infrastructure is 1.33. This value is in the bad category, namely 1-2.33 which is a weighting criterion in assessing the availability of road infrastructure. Based on these weighting criteria, it is obtained that the need for paved roads or paving blocks is 12,030 m long, but until now the need for roads has not been fulfilled.

4.1.9 DRAINAGE NETWORK ANALYSIS

Based on existing guidelines, if more than 70% of the drainage length complies with the provisions, then the score given is 5. The internal parameters used as a reference are 2 drainage channels. The

$$= 2 = 5$$

From the results above, it can be seen that the average level of drainage availability is 5 parts of the 2 drainages that already exist and are part of and developed into 5 parts in the Tumburano Waterfall location to support waterways and reduce waterlogging on the road

4.1.10 CLEAN WATER NETWORK NEEDS

The target of achieving SPM for safe drinking water through SPAM with a pipeline network and not a protected pipeline network with a basic need of at least 60 liters/person/day in 2022 is divided based on the current drinking water service cluster (2009 BPS Susenas data source), as follows :

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Table 8. Achievement of Drinking Water SPM

Service Clusters	Indicator	SPM Value (%)
Very bad	Availability of access to safe drinking water through a drinking water supply system with a pipeline network and not a protected pipeline network with a minimum basic need of 60 liters/person/day	40
Bad		50
Currently		70
Good		80
Very good		100

The number of visitors in 2022 is 2,342 people or an average of 40%, it is still so bad that it is needed in development. Based on existing guidelines, when < 40% of the sample states bad conditions, the score is 1 Clean water, which means water that can be consumed by residents in the tourist area of Tumburano Waterfall. Currently, there is no clean water that can be consumed, while water for drinking is bottled water sold by residents who sell food and drinks.

4.1.11 GARBAGE NEEDS ANALYSIS

There are only 3 tanks available in the Tumburano Waterfall tourist area in 2020, 4 tanks in 2021 and 4 tanks in 2022. The need for trash cans for the next 5 years is obtained as follows

Table 9. Garbage Trash Needs

Year	Visitors (Pn)	Waste production (kg/person)	Total Waste Production (kg)	Available Garbage Bin Capacity (kg)	Good Trash Available
2023	2,259	0.35	790.48	200	4
2024	2,327	0.35	814.42	200	4
2025	2,397	0.35	839.04	200	4
2026	2,470	0.35	864.36	200	4
2027	2,544	0.35	890.40	200	4

Data in Table 5.36 shows that waste processing in the Tumburano Waterfall tourist area requires 4 trash bins with a capacity of 200 kg. The waste produced from each visitor is projected to be 0.35 kg/person.

Table 10. Trash Cart Needs

There is no service for trash carts in the existing conditions, while the provisions according to the minimum service standard are 15 units for visitors in Tumburano Village are analyzed as follows

Year	Visitors (Pn)	Waste production (kg/person)	Total Waste Production (kg)	Garbage Cart Capacity (kg)	Good Trash Available
2023	2,259	0.35	790.48	100	8
2024	2,327	0.35	814.42	100	8
2025	2,397	0.35	839.04	100	8
2026	2,470	0.35	864.36	100	9
2027	2,544	0.35	890.40	100	9

Source: Processed data (2022)

The data in Table 5.37 shows that the need for trash carts reaches 9 units, even though the need is still less than 15 units as stipulated in the minimum service standards.

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Table 11. Need for Garbage Containers

Future waste container needs are presented in the following table:

Year	Visitors (Pn)	Waste production (kg/person)	Total Waste Production (kg)	Garbage Cart Capacity (kg)	Good Trash Available
2023	2,259	0.35	790.48	300	3
2024	2,327	0.35	814.42	300	3
2025	2,397	0.35	839.04	300	3
2026	2,470	0.35	864.36	300	3
2027	2,544	0.35	890.40	300	3

Source: Processed data (2022)

Data in Table 5.38 shows that the need for waste containers reaches 3 units, even though the need is still less than 15 units as stipulated in the minimum service standards.

5. CONCLUSION

Based on the results of the research and discussion put forward in this study, it can be concluded as follows:

1. Availability of basic facilities and infrastructure at the Tumburano waterfall tour requires good management because where parking space is poor, gazebos are still limited, guard posts that are placed are still not functioning properly, bathrooms and toilets are still lacking, roads have not been paved/ no paving blocks, drainage is not functioning, clean network is not functioning, and waste facilities are not properly available.
2. Tumburano waterfall tourism facilities and infrastructure by increasing the number of visitors needed in tourist areas with facilities including the provision of parking lots, gazebos, guard posts, bathrooms and toilets, road paving, drainage construction, provision of water tanks and waste management systems such as provision of trash cans, trash carts and waste containers in the future.

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