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Feasibility Study of Cisaat SMPN I Relocation in The Cisaat Urban Area

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ABSTRACT

Educational facilities are one of the urban facilities and infrastructure that cannot be simply ignored. The existence of educational facilities must be able to accommodate the needs of the community in fulfilling the need for education, following the mandate of the 1945 Constitution to educate the life of the nation. Cisaat Middle School is one of the educational facilities located in the Cisaat urban area, which is in the trade and service area. The existence of these educational facilities needs to be reviewed for feasibility related to the completeness of infrastructure as well as comfort and safety in the learning process. The methodology used in this study itself uses quantitative and qualitative research methods where the research begins with collecting data from existing schools, which is then compared with the minimum standard of school infrastructure. Furthermore, data collection related to possible relocation alternatives is carried out by making several assessment variables, so that it is expected to be able to provide recommendations for appropriate relocation directions. From the results of the study, we can get the result that the location of the Cisaat Middle School is no longer suitable be used as a place of education from several points of view. Meanwhile, for the relocation land itself, several locations can be used as relocation candidates with several advantages and disadvantages.

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1. INTRODUCTION

Educational facilities are one of the complete city facilities and infrastructure that must be available and can serve the needs of the community in obtaining an education (Setiawan et al., 2022). Following what is stated in Article 31 paragraph (1) of the 1945 Constitution of the Republic of Indonesia which reads "Every person has the right to a child for basic education which is the main prerequisite in providing basic abilities and skills for children to continue their education at the secondary and higher education levels (Akbardin et al., 2020; Fang et al., 2015). The follow-up to the 1945 Constitution of the Republic of Indonesia was promulgated in Law No. 20 of 2003 concerning the National Education System, where in the preamble to point (a): "that the opening of the 1945 Constitution of the Republic of Indonesia mandated the government of the Republic of Indonesia and all Indonesian bloodshed, and to promote public welfare".

This ever-increasing demand became the basis (Bijl-brouwer & Voort, 2014; Kim, 2017) for the immediate relocation of SMPN Cisaat. Due to development in locations that are currently experiencing various obstacles (Permana et al., 2020). Namely, the available land does not support the planned development. For this reason, research is needed to assess the feasibility (Permana & Wijaya, 2017) of the existing location of SMPN 1 Cisaat (Setiawan et al., 2021) in terms of various aspects related to the provisions of infrastructure and building regulations (Kesumasari, 2019; Kencanasari et al., 2020) according to applicable regulations. At the same time looking for potential land that can be used for the relocation of SMPN 1 Cisaat.

The purpose of this study was to evaluate the feasibility (Lau, et al., 2016)of relocating Cisaat Middle School in the relocation program by formulating the basic considerations of the need for relocation based on an assessment (Rinaldi and Permana, 2019; Nurmayadi and Hendardi, 2020; Rizky, et al., 2022) of the existing location and analyzing the availability of suitable land in meeting the needs of educational facilities and infrastructure.

2. RESEARCH METHODOLOGY

The analysis carried out was a research with a quantitative descriptive analysis method by processing descriptive data and quantitative data. Descriptive data in the form of; supporting documents, field notes, photographs, and interviews. Quantitative data in the form of; count, measuring numbers, and quantifying records. In general, the steps taken in conducting the research are as follows:

a. Determining the theme, namely the Feasibility of Relocating Cisaat Middle School Buildings. Components used as a reference for the feasibility of SMP buildings include accessibility, carrying capacity and capacity, building regulations, etc. Make background, aims, and objectives of the study.
b. Conduct a Literature Review that supports an analysis of the feasibility of buildings in terms of the minimum requirements for educational buildings, with a case study of the Cisaat Middle School Building.
c. Collect physical and non-physical data related to the topic.
d. Perform analysis of sub-component data in the Feasibility of Existing Buildings. Then carry out an analysis of the sub-components at several candidate locations for relocation of SMPN 1 Cisaat.

Make conclusions based on the results of data analysis and formulate recommendations that can be used as one of the inputs for the Education Facility Manager, in this case, the Sukabumi Regency Education Office, in determining further policies.

3. RESULT AND DISCUSSION

3.1 Overview of Cisaat Urban Area

Cisaat is a sub-district in Sukabumi Regency, West Java Province, Indonesia, with the highest density in Sukabumi district. Cisaat has an area of 23.09 square kilometers and a population of 129,704 people with a population density of 5,997 people/square kilometer.

Table 1. General Description of Cisaat District

NO	DESCRIPTION	CISAAT DISTRICT	
1	An area	23.09	km2
2	Comparison of the area to the area of regency	0.07	%
3	Distance to the Regency Capital (Palabuhanratu)	69	km
4	Altitude area (masl)	500	- 550

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NO	DESCRIPTION	CISAAT DISTRICT	
5	Number of Villages	13	village
6	Total population	129,704	people
7	Population density per km2	5,997	org/km2
8	Annual population growth rate	1.26	%

Source: Cisaat District in 2020 figures

3.2 Educational Facilities in the Cisaat Urban Area

In general, the number of schools in the Cisaat Urban Area is spread across all villages in the Cisaat Urban Area, starting from Kindergarten/Early Childhood Education (PAUD) facilities, Elementary Schools (SD), Madrasah Ibtidaiyah (MI), Advanced Level Schools First (SLTP), Madrasah Tsanawiyah (MTs), Senior High School (SLTA), Madrasah Aliyah (MA). This condition shows that educational facilities in the Cisaat Urban Area are still quite adequate.

3.3 SMPN 1 Cisaat

SMPN 1 Cisaat, better known by its alma mater as Necis One, was founded in 1966. This school is the first school in the Cisaat sub-district, located on Jl Raya Cisaat no 243A which is not far from Sukabumi City. The location is very strategic, not far from Sukabumi City. because the Cisaat sub-district is a buffer for the city of Sukabumi.

Figure 1. SMPN 1 Cisaat
Source: Author's Documentation, 2022

Table 2. Overview of SMPN 1 Cisaat

NO	Data	description
1	Location	Sukamana Village
2	Land area	2045 m2
3	Total Floor Area	1745 m2
4	Building Height	10 meters
5	Number of Building Floors	2 floors
6	Number of Troops	23 rhombs
7	Number of Students/Students	751
8	Total number of teachers	32
9	Number of employees other than teachers	12

Source: SMPN 1 Cisaat

Based on the data we obtained data on the development the number of students at SMPN 1 Cisaat saw a decrease in 2019, this was due to the covid 19 pandemic, so the school itself limited the number of students and began to apply a maximum standard of the number of students for each class. Apart from that, we can see a decrease in the number of students admitted to themselves from the number of classes and the number of new student admissions in grade 7, where it can be seen that the number of classes for grades 8 and grade

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9 each has 8 classes, but grade 7 only has 7 classes. The class reduction occurred due to a change in the function of the classroom into other educational facilities to meet school infrastructure standards, especially for junior high schools.

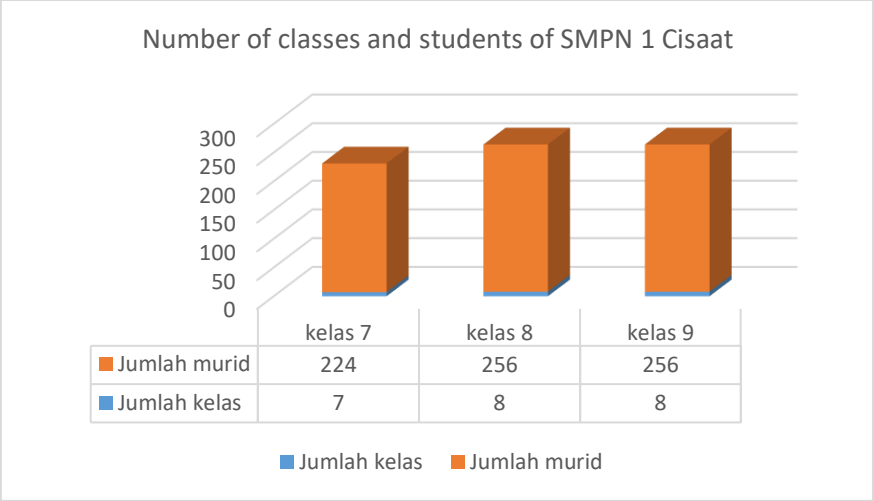

Figure 2. Graph of The Number Classes and Students in each class at SMPN 1 Cisaat
Source: SMPN 1 Cisaat Year 2020/2021

The plan to relocate SMPN 1 Cisaat itself will be the starting point in improving the quality and quantity of school infrastructure based on ministerial standards. It is hoped that SMPN 1 Cisaat will become a pilot project in implementing infrastructure standards so that it can produce quality and outstanding graduates.

3.4 Feasibility Analysis of SMPN 1 Cisaat (Existing)

We will try to focus our research on the location of SMPN 1 Cisaat where from the 2022 data we can see that the number of students is 751 people divided into 23 groups. So we can see that the average class has 32.65 students, and the maximum student requirement per class has exceeded capacity. For this reason, additional classrooms are needed. Expansion and the addition of classes themselves are no longer possible due to limited land available. Apart from that, we are trying to make a study to be able to see to what extent the suitability of SMPN Cisaat's infrastructure is reviewed from the various variables/indicators that form the basis of the assessment in this school relocation.

Table 3. List of Assessment Indicators

No	Assessment Indicator	Standard	Existing Condition of SMPN 1 Cisaat	corresponding	not suitable	it is not following
1	Education units	Serves a minimum of 3 groups and a maximum of 27 groups	There are 23 Rombels	√		
		Minimum 1 District has one SMPN	Cisaat District has 2 Public Middle Schools	√		
2	Land	Based on the rules of the minimum land requirement ratio for the number of students 736 with the number of floors 2 (two) is 4,490 m2	The existing land area is 2,074 m2			√

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No	Assessment Indicator	Standard	Existing Condition of SMPN 1 Cisaat	corresponding	not suitable	it is not following
3	Location suitability	Location Educational facilities must be outside trade, commercial and industrial areas	Located in the trade and commercial area			√
4	Land Slope	The average slope of the land is less than 15%, not inside the river and railroad lines.	Relatively flat	√		
5	Security & Safety	The land is protected from potential hazards that threaten the health and safety of the soul and has access to rescue in an emergency.	The location is relatively narrow and has limited access to emergency rescue			√
6	Water pollution	PP RI No. 20 of 1990 concerning Water Pollution Control.	there should be further research	√		
7	Air pollution	Air pollution, according to Ministry of Environment Decree No. 02/MEN KLH/1988 concerning Guidelines for Establishing Environmental Quality Standards.	The location of the school is in a busy traffic lane without any green plants as an air buffer			√
8	Noise	Noise, according to Ministry of Environment Decree number 94/MENKLH/1992 concerning Noise Quality Standards.	Traffic noise and trading activities become a problem in the comfort of learning			√
9	Building area	Based on the minimum building requirement ratio rules for 736 students with 2 (two) floors is 2,650 m2	The existing building area is 1,730 m2			√
10	Building Base Coefficient	The maximum KDB allowed based on the candy is 30%, in the	If you look at the comparison of land area and existing building area, you			√

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No	Assessment Indicator	Standard	Existing Condition of SMPN 1 Cisaat	corresponding	not suitable	it is not following
		regional regulations the maximum is 40%	get an existing KDB of more than 60%			
11	Outdoor	Open space is functioned as a means of sports, playing, parking, and green open space, which is 70% of the land area	The open space area only has a ceremonial field and parking which is quite minimal and does not meet minimum standards			√
12	Green Basic Coefficient	Based on the zoning regulations on the RDTR of the Cisaat urban area, the minimum KDH required is 40% of outside open space	there is relatively no green open space, only potted plants around the school,			√
13	Building Floor Coefficient	0.8	if you look at the existing land area, the maximum floor area is 1,659 m2, then the existing floor area has exceeded the provisions of the KLB			√
14	Building Height	based on local regulations RDTR a maximum of 10 meters	8 meters outside the roof	√		
15	Road Boundary Line	Referring to the GSJ rules, with the status of a regency road, it must have a minimum of 8 meters calculated from the area belonging to the road	The fence wall is directly adjacent to the city drainage path. The outer wall of the building is less than 2 meters from the road area			√
16	distance between buildings and parcels	The minimum distance of 2 meters between parcels	there is no distance to parcel boundaries			√
17	Environmental Drainage			√		

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No	Assessment Indicator	Standard	Existing Condition of SMPN 1 Cisaat	corresponding	not suitable	it is not following
18	Pedestrian Path	Pedestrian paths with a sidewalk type with a minimum width of 1.5 meters; Pathways for pedestrians and bicycles with a minimum width of 2 meters;	There are no pedestrian paths			√
19	pedestrian facilities	guiding block, seats, bins, etc	There are no facilities for pedestrians			√
20	Green open space	green open space in the form of plazas, green paths, and parks	there is no green open space along the road in front of the school			√

Source: Author

Out of the twenty assessment indicators, SMPN 1 Cisaat obtained a score of 6, where the basis for the assessment was a score of 10 to 15 that was quite feasible, a score of 15 to 20 was feasible, while a score of <10 was not feasible and a review was required. From the results of the analysis above, it can be concluded that SMPN 1 Cisaat is already has the eligibility for relocation.

3.5 Land Needs Analysis

In the relocation effort itself, it is necessary to take into account the need for land that can accommodate the minimum standard of school infrastructure, including considering the rate of population growth which is directly correlated with the growth in the number of students/students. In determining the area of this infrastructure, we try to maximize it to be able to accommodate the needs of 33 classes as one of the anticipations in accommodating the number of student growth in the following year. Based on the existing regulatory standards, we can estimate the following.

Table 4. Infrastructure Needs for SMPN 1 Cisaat

No	Types of Infrastructure	Amount	Floor area		
			1 Floor	2 floors	3 floors
1	Classroom	33	2,079	1,040	693
2	Library room	1	105	105	105
3	Science Laboratory Room	1	120	120	120
4	Leadership / Principal Room	1	20	20	20
5	Teacher's room	1	128	128	128
6	Administration room	1	63	63	63
7	Worship place	1	210	210	210
8	Counseling Room	1	9	9	9
9	UKS room	1	48	48	48

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No	Types of Infrastructure	Amount	Floor area		
			1 Floor	2 floors	3 floors
10	Student Organization Room	1	9	9	9
11	Latrines/ Toilets	1	108	108	108
12	Warehouse	1	21	21	21
13	Canteen	1	371	371	371
14	Inclusive Education Resource Center Room	1	30	30	30
15	Computer Laboratory Room	1	96	96	96
16	Language laboratory room	1	96	96	96
17	Teacher's Office	4	144	144	144
18	Guardhouse	1	12	12	12
19	Circulation	ls	1.101	789	685
	Amount		**4,770**	**3,418**	**2,968**

Source: Author

In the table above we made 3 kinds of estimates related to the area of the building related to the number of floors to be planned, in this case, the floor distribution is only done for classrooms where the other facilities still refer to one floor. From the results of the calculation above, we can conclude that the required ground floor is around 2,988 m2 to 4,770 m2. Based on the Regulations of the Minister of National Education KDB for Education itself is regulated to have a maximum KDB of 30%, so the land required based on the calculation above is an area of 9,893 m2 to 15,899 m2. So the minimum land required in this relocation plan is around 1 Ha.

3.6 Land Analysis for Relocation of SMPN 1 Cisaat

One of the theories that underlie the distribution of the location of facilities that provide services in the form of services, is the Central place theory of a geographer, Walter Christaller. According to Christaller (1933), service centers tend to be spread out in areas according to a hexagon-shaped pattern.

But in reality, the population is spread unequally and they have to fulfill their needs for goods and services from facilities that are spread in separate places. However, people tend to choose the most accessible facilities. What is meant by 'most accessible' is (Fisher & Rushton, 1979)

a. Minimum total distance traveled.
b. The farthest distance traveled is the minimum.
c. The number of residents around the facility is always greater than a certain number (eg shopping centers).
d. The number of residents around the facility is always less than a certain number (for example puskesmas)

From the research results based on image maps, three alternative locations can be obtained which have the opportunity to be the location of SMPN 1 Cisaat seen from the availability of vacant land. As we can see in the following image:

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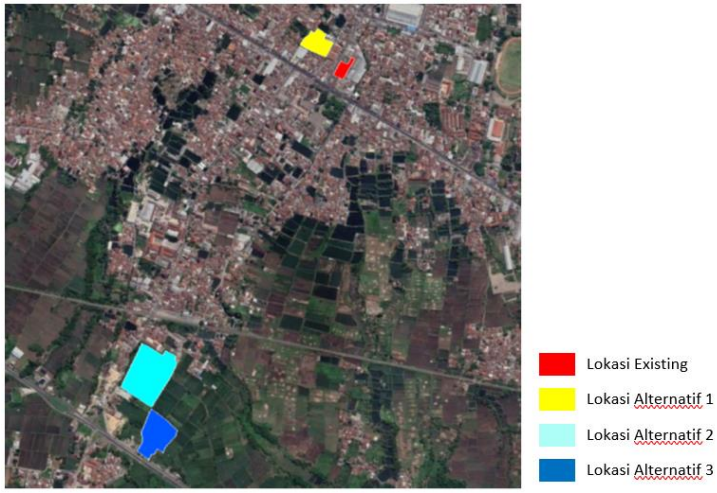

Figure 3. Location of Research Land
Source: Google Earth

From the three prospective land locations for the relocation of SMPN 1 Cisaat, the following initial data were obtained. The comparison of data obtained from the 3 alternative locations is as follows:

Table 5. Comparison of Land Data

NO	DATA	ALT 1	ALT 2	ALT 3
1	Land Availability	5000m2	19000 m2	10000m2
2	Administrative area	Nagarak Village	Cisat Village	Cisat Village
3	Distance from the existing location	65m	1053m	1422 m2
4	Road Access	Has access to district roads	Has access to district roads	have provincial road access
5	Slopes	0-1%	0-5%	0-15%
6	Expansion potential	there aren't any	there is	there is
7	Space Pattern	Trade and Services	Settlement	Settlement
8	Achievement	The road is passed by the bus	The road is passed by the bus	The road is passed by the bus
9	Existing Land	Vacant land + buildings	Dryland	Ricefield

Source: Author

From the data above, we will then carry out a test using an assessment based on the provisions of the building requirements and also the minimum infrastructure provisions for SMP. Self-scoring is based on eligibility on 20 indicators with the following assessment basis:

41 s/d 60	Layak
21 s/d 40	cukup layak
20 kebawah	tidak layak

Table 6. Assessment Scoring

NO	EVALUATION	SCORE
1	Corresponding	3
2	Quite appropriate	2
3	not suitable	1
4	it is not following	0

Source: Personal analysis

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The indicators that are used as an assessment are an important part of the material in land acquisition and subsequent planning, so that they can meet the standards of educational facilities and infrastructure as well as applicable building regulations standards. The following is a feasibility calculation table for several alternative locations as follows:

Table 7. Location Feasibility Assessment Indicators

NO	INDICATOR EVALUATION	ASSESSMENT STANDARDS	ALT 1		ALT 2		ALT 3	
1	Distance from the existing location	Has proximity to the starting location	65m	3	1053m	2	1422 m2	2
2	Land	based on the results of the calculation of the required land area of at least 9,893 m2	5000m2	-	19000 m2	2	10000m 2	3
3	Suitability of the location to the spatial plan	Location Educational facilities must be outside trade, commercial and industrial areas	The location is in a commercial, trade, and service area	-	Located in a priority Sub BWP residenti al area	3	Located in a residenti al, trade, and service area	2
4	Land Slope	The average slope of the land is less than 15%, not inside the river and railroad lines.	0-1%	3	0-5%	3	0-15%	2
5	Security & Safety	The land is protected from potential hazards that threaten the health and safety of the soul and has access to rescue in an emergency.	have limited access	1	Has access to district roads	3	have provinci al road access	3
6	Water pollution	PP RI No. 20 of 1990 concerning Water Pollution Control.	are in a dense environmen t	2	currently	3	currently	3
7	Air pollution	Air pollution, according to Ministry of Environment Decree No. 02/MEN KLH/1988 concerning Guidelines for	The environmen t is relatively dense, the traffic	1	currently	2	currently	2

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NO	INDICATOR EVALUATION	ASSESSMENT STANDARDS	ALT 1		ALT 2		ALT 3	
		Establishing Environmental Quality Standards.	density is sufficient to contribute to an unhealthy environment					
8	Noise	Noise, according to Ministry of Environment Decree number 94/MENKLH/1992 concerning Noise Quality Standards.	is on a solid line	-	is on the slow track	3	Be on the fast track	2
9	Congestion	Not in a location prone to traffic jams	Heavy traffic and frequent jams	-	slow lane	2	relatively jam-free	3
10	Building area	based on an analysis of the needs of the building's ground floor area of at least 2,968 m2	unable to accommodate the needs of the building area	-	can accommodate the needs of the building area	3	can accommodate the needs of the building area	3
11	Achievement	It must be easily accessible from all directions	there is a bus route	3	there is a bus route	2	there is a bus route	3
12	Land development		difficult	-	still can	3	still can	3
13	City utility	Availability of city utility network	there is	3	there is	3	there is	3
14	Land prices	cheap	10 million/m2	1	1 - 2 million/m2	3	2-3 million/m2	2
15	land ownership	Ease in the buying and selling process	one ownership	3	one ownership but there are indicatio	1	multiple holdings	2

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NO	INDICATOR EVALUATION	ASSESSMENT STANDARDS	ALT 1		ALT 2		ALT 3	
					ns of land disputes			
16	Building Base Coefficient	The maximum KDB allowed based on the candy is 30%, in the regional regulations the maximum is 40%	cannot be applied to 33 groups	-	can be applied	3	can be applied	3
17	Outdoor	Open space is functioned as a means of sports, playing, parking, and green open space, which is 70% of the land area	cannot be applied to 33 groups	-	can be applied	3	can be applied	3
18	Green Basic Coefficient	Based on the zoning regulations on the RDTR of the Cisaat urban area, the minimum KDH required is 40% of outside open space	cannot be applied to 33 groups	-	can be applied	3	can be applied	3
19	Building Floor Coefficient	0.8	cannot be applied to 33 groups	-	can be applied	3	can be applied	3
20	Road Boundary Line	Referring to the GSJ rules, with the status of a regency road, it must have a minimum of 8 meters calculated from the area belonging to the road	cannot be applied to 33 groups	0	can customize	3	can customize	3
		Amount		20		53		53

Source: Personal analysis

From the results of the assessment of several indicators above, it can be concluded that locations that have a high level of feasibility value are in alternative locations 2 and 3 with detailed explanations as follows:

a. Alternative 1 location is not suitable for relocation of SMPN 1 Cisaat, for several reasons, including it being located in a commercial area that has a high density of city activities, causing the impact of traffic jams, noise, and air pollution. Besides that, the land area cannot meet the standard for analysis of space requirements for 33 groups.

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b. The second alternative location is suitable as a relocation location for SMPN 1 Cisaat considering the carrying capacity and capacity of the land that is possible. Besides that, the location is close to settlements and elementary education facilities. The drawback of this location is that there are indications of land disputes that must be traced to the truth so that it does not become a problem in the future.
c. The 3rd alternative location has the same feasibility score as the 2nd alternative, the weakness is in the level of the slope of the land so it is mandatory to carry out land preparation in the form of cut and fill. In addition, considering the location is on a provincial road, pedestrians must anticipate crossings by using a pedestrian bridge.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of a study on the existing location of SMPN 1 Cisaat, it has a low feasibility value due to several factors that cause discomfort in the learning process, including the location which is in the center of trade and service activities so that the impact of congestion, noise, and air pollution is the main enemy in the learning process. In addition, from a structural point of view, many educational buildings (classes) violate the road demarcation line, apart from that open space facilities in the form of sports/play fields, parking facilities and green open spaces do not meet building requirements. In terms of safety aspects, the results of observations of evacuation routes were quite minimal, coupled with access to one place in an area that did not meet standards. Of the three alternative locations, there are 2 locations, namely alternatives 2 and 3, both of which have the same score but have different strengths and weaknesses. These two locations can be used as references in the relocation program by considering budget availability and ease of land acquisition. Thus the results of this study can be used as a reference in determining the next policy direction for the Regional Government, so that it can provide maximum benefits to the people of Cisaat District in particular and Sukabumi Regency in general.

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