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Analysis of Traffic Impact Due to Construction of Village Government Offices on MT Haryono Road Samarinda City, Indonesia

Tukimun [a++*], Viva Oktaviani [b++] and Musrifah [b++]

[a] Civil Engineering Masters Study Program, University of 17 August 1945 Samarinda, Indonesia.
[b] Civil Engineering Study Program, University of 17 August 1945 Samarinda, Indonesia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Development of the Village Government Office Area located on MT. Haryono Street Samarinda City based on Minister of Transportation Regulation no. 17 of 2021 is included in the Low Andalalin category, where the development activities do not have a significant impact on traffic on roads and intersections. The results of the analysis by modeling the increase in traffic growth each year also did not cause a significant decrease in the performance and level of service of a road section or intersection. However, to create sustainable and well-implemented development, efforts are made to maximize the level of safety and comfort for road users around the activity area using vehicle circulation, pedestrian facilities, signs or markings, and traffic engineering management. as well as

[++] Lecturer;
**Corresponding author: Email: moonix.mgt@gmail.com;*

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other safety and comfort supporting facilities. Considering that Andalalin is a requirement that is integrated with the Amdal study in arranging a Building Construction Permit (IMB), the initiator must take care of the traffic impact analysis recommendations, which of course apart from maintaining human and environmental safety is also an administrative requirement that must be fulfilled.

Keywords: Traffic impact; terminal type B; Samarinda City.

1. INTRODUCTION

The construction of a settlement in general can have a certain impact on the movement of traffic in the surrounding area. If there is a large/medium/low impact on traffic, a study needs to be carried out so that problems that have the potential to occur can be handled wisely. This time, the traffic study was carried out in the Community Empowerment Service and Village Government Office Area to predict the impact that could have on the surrounding traffic network [1].

The traffic impacts that occur are the impact of the generation and attraction of trips during construction, during operations, as well as from traffic flows that increase every year. Therefore, it is necessary to carry out a comprehensive study on the traffic aspects for this activity by collecting primary and secondary data to determine the impact of the construction and operation of the Community Empowerment Office and the Village Government in question on the traffic network around the study location. This study was carried out based on the principle of accessibility and mobility aspects which contain various variables of the ability of road infrastructure users to be able to access their respective activities [2].

Certainly, the Community Empowerment and Village Government Office will not have a particular impact on traffic around the activity location (Andalalin Bangkitan Bawah) because it has a floor area of between 1,000 to 4,000 M^2. Based on Law Number 22 of 2009 concerning Road Traffic and Transportation article 99 paragraph (1) stated that "Every plan to build activity centers, settlements and infrastructure that will disrupt security, safety, order and the smoothness of traffic and road transportation a traffic impact analysis must be carried out." In line with this law, Technical Standards for Handling Traffic Impacts (hereinafter referred to as Andalalin) have been prepared for the Office of Community Empowerment and Village Government to support everything related to security, safety, order, and smooth traffic for road users in around the activity location [3,4].

Traffic management arrangements and supporting infrastructure for smooth accessibility and mobility of road users that must be made are the responsibility of the initiator who shows the fulfillment of substantial contributions as a consequence of what has been built (Polluter Pays Principle, 1992) with the externality principle that development prioritizes a cost-effective agenda to know that treatment and prevention is the cheapest price, compared to correcting errors that may occur later. After the Technical Standards for Handling Traffic Impacts have been prepared, the expected output is the formation of a plan for handling traffic impacts as a reference for taking action for development for a specified period [3].

The purpose of conducting a traffic impact analysis is to (1) predict the impacts of regional development; (2) determine the form of improvement/repair needed to accommodate changes occurring as a result of new development; (3) align decisions regarding land use with traffic conditions, number and location of access, as well as improvement/improvement alternatives; (4) identify issues that may influence the developer's decision to proceed with the proposed project; and (5) as a monitoring and evaluation tool for the implementation of traffic management and engineering [5].

The location of this research is at the Government and Village Office (Pemdes) which is located in MT. Haryono Street, Samarinda City, East Kalimantan. The following is the research location.

To create sustainable and well-implemented development, efforts are made to maximize the level of safety and comfort for road users around the activity area using vehicle circulation, pedestrian facilities, signs or markings, and traffic engineering management.

Fig. 1. Research location
(Source: Google Earth, 2023)

2. LITERATURE REVIEW

The traffic impact phenomenon is caused by the construction and operation of activity centers that cause quite large traffic generation, such as office centers, shopping centers, terminals, etc. It is further said that the traffic impact occurs in 2 (two) stages, namely: The construction/ development stage. At this stage, there will be traffic generation due to the transportation of materials and the mobilization of heavy equipment which burdens the road sections on the material route and in the post-construction stage / during operation. At this stage, there will be traffic generation from visitors, employees, and transportation service sellers which will burden certain road sections, as well as vehicle parking generation [6].

Traffic impact analysis is an analysis of the influence of land use development on the surrounding traffic flow system caused by the generation of new traffic, diverted traffic, and vehicles entering and exiting the land [7].

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Traffic impact analysis is an analysis of the influence of land use development on the surrounding traffic flow system caused by the generation of new traffic, diverted traffic, and vehicles entering and exiting the land [9].

There are 5 factors/elements that will have an impact if the land use system interacts with traffic. These five elements are (1) generation element/travel attraction, which is influenced by the type and class of use, intensity, and location of generation; (2) road network performance elements, which include the performance of roads and intersections; (3) access elements, regarding the number and location of access; (4) parking space element; and (5) environmental elements, especially regarding the impact of pollution and noise [8,10].

The targets of conducting a traffic impact analysis are: (1) assessment and formulation of the traffic impact caused by the new development area on the surrounding road network/external road network, especially the road sections that form the main network system; (2) efforts to synchronize government policies in relation to the provision of road infrastructure, especially plans to improvement road infrastructure and intersections around major developments which are expected to reduce conflicts, traffic jams and obstacles; (3) providing solutions that can minimize traffic congestion caused by the impact of new development, as well as preparing indicative proposals for additional facilities needed to reduce the impact caused by traffic generated by the new development, including efforts to maintain the level of service of existing road network system

infrastructure; (4) preparation of recommendations for regulating the internal road network system, access points to and from the land being built, the need for parking space facilities and providing as much as possible for easy access to the land to be built [11].

3. METHODOLOGY

3.1 Research Flow Chart

The research method was carried out using the MKJI 1997 calculation method for transportation analysis and modeling with Vissim for modeling roads and intersections and was guided by the regulations in force in Indonesia. The research activities carried out are as follows: preparation, literature review, observation/ survey, data collection, data analysis, and reporting. The research flow chart is presented in Fig. 2.

3.2 Research Data Analysis

The analysis method used is Traffic Impact Analysis Due to the Construction of the Village Government Office on MT. Haryono Street Samarinda City is using the 1997 MKJI Method and 4 Stage Modeling [11]. and modeling with Vissum for modeling roads and intersections to model future traffic conditions.

4. RESULTS AND DISCUSSION

4.1 Land Status and Use

All DPMPD / Government and Village Office building construction activities were carried out on land belonging to the East Kalimantan Provincial Government which, based on the results of a study of the Regional Spatial Planning (RTRW), is included in the government office area. The land use is for offices and other supporting facilities with a land area of 2,699m2. In terms of legality and design, the Village Government office meets the regulatory criteria that apply to the Samarinda City Government.

4.2 Division of Regional Zones

The boundaries of the study area, these zones are divided into internal zones and external zones. The zone within the study area (internal zone) has a huge influence on the traffic movement system within the study area. Meanwhile, zones that are outside the boundaries of the study area (external zones) are considered to have little or no influence on the movement of traffic flows in the study area. The study area is divided into 5 zones which are considered to influence and be affected by the construction of the Government and Village Office Building. The distribution is presented in Fig. 3.

Fig. 2. Research flow chart

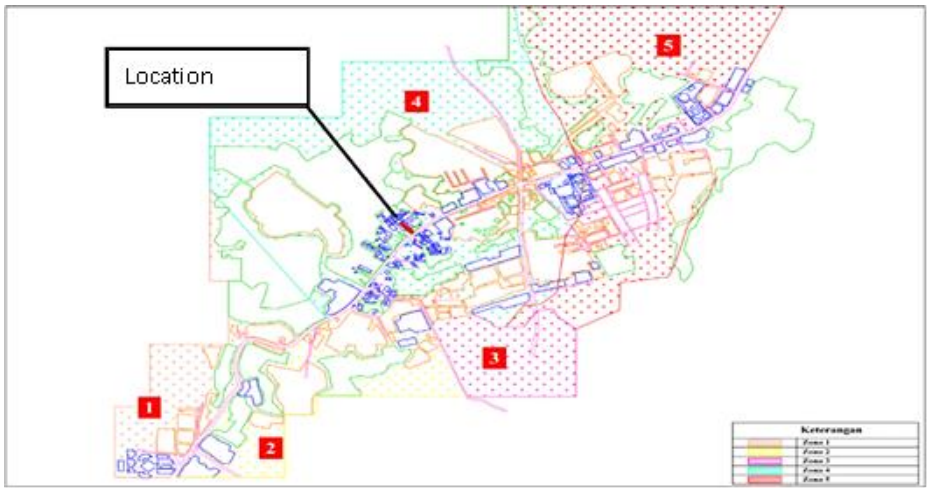

Fig. 3. Regional zoning map
(source: Analysis Results, 2023)

Table 1. Data on affected road sections and intersections

Junction	Foot Junction	
Code	Code	Street Name
Junction 1	1	Insinyur H. Juanda Segment 1
(Juanda Junction)	2	Pangeran Antasari Segment 1
	3	MT Haryono Segment 3
	4	Pangeran Suryanata Segment 1
Junction 2	1	MT Haryono Segment 1
(DPR Junction)	2	Tengkawang
	3	Teuku Umar
	4	M. Said
-	1	MT Haryono Segment 2
	1	Banggeris
	1	Pangeran Suryanata Segment 2
	1	Insinyur H. Juanda Segment 2
	1	Insinyur H. Juanda Segment 3
	1	Wijaya Kusuma
	1	Pangeran Antasari Segment 2

Source: Location analysis results, 2023

Table 2. Existing condition travel matrix 2023 (PCU/Hour)

O/D	1	2	3	4	5	Number
1	0	1350	530	400	0	2280
2	736	0	550	740	0	2026
3	0	1150	0	870	0	2020
4	450	650	440	0	1544	3084
5	0	0	0	1571	0	1571
Number	1186	3150	1520	3581	1544	10981

Source: Location analysis results, 2023

4.3 Existing Traffic Performance

Data on sections and intersections affected by the construction of the Village Government Office on MT. Haryono Street is as follows (Table 1):

Data from the analysis of road loading on existing road sections are as follows (Tables 2, 3, and 4):

Based on the table above, the results can be obtained that there is a link that has a V/C ratio

of 0.74, namely on M. Said Street. In general, the roads around the Village Government Building are still able to accommodate traffic volumes and the lowest level of service (LOS) on the roads around the Village Government Building is at level C.

Table 3. Performance of existing road sections

No	Road Section Name	Capacity Total (smp/hour)	Volume (smp/hour)	V/C Ratio	Speed (Km/Hour)	Density (smp/km)	LOS
1	Tengkawang	5844	1724	0,29	54,5	3134.55	B
2	Teuku Umar	6148	1996	0,32	54,5	587.06	B
3	M. Said	1435	1072	0,74	25,5	345.81	C
4	MT Haryono Segmen 1	5432	1627	0,29	54,5	650.8	B
5	MT Haryono Segmen 2	5432	1774	0,32	54,5	709.6	B
6	MT Haryono Segmen 3	5432	2051	0,37	54,5	820.4	B
7	Banggeris	1313	603	0,45	25,5	603	C
8	Suryanata Segmen 1	4978	1671	0,33	30	183.63	B
9	Suryanata Segmen 2	4978	1344	0,26	30	147.69	B
10	Juanda Segmen 1	5251	2572	0,48	40,5	1286	C
11	Juanda Segmen 2	5251	2466	0,46	40,5	1233	C
12	Juanda Segmen 3	5251	3378	0,64	40,5	1689	C
13	Wijaya Kusuma	1313	743	0,56	24,5	928.75	C
14	Antasari Segmen 1	5094	2226	0,43	41,5	1171.58	B
15	Antasari Segmen 2	5094	2253	0,44	41,5	1185.79	B

Source: Location analysis results, 2023
Note: smp = passenger car units

Table 4. Performance of existing intersections

Street Name	Queue	Delay
Simpang Juanda	259,60	173,97
Simpang DPR	213,76	171,63

Source: Location analysis results, 2023

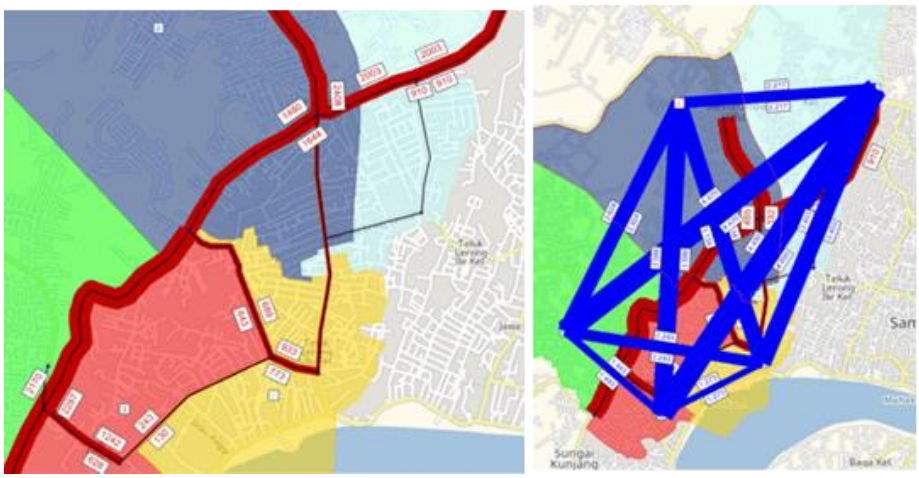

Fig. 4. Existing traffic performance
(Source: PTV Vissum analysis results, 2023)

4.4 Traffic Performance During Construction Period (Do Nothing)

The indicators that will be used in predicting the generation and attraction during the construction period are the frequency of material and worker vehicles to determine the magnitude of the generation so that it is known that the generation and attraction during the construction of the Village Government building is 42.4 pcu/hour. Then the results of the traction generation are distributed throughout the construction period. For more details, see the Table 5.

Based on the table above, information can be obtained that for conditions during construction (Do Nothing) when the village government building was being built, there was a link that had a V/C ratio of 0.75, namely on M. Said street with a road service level or level of The lowest service (LOS) on roads around the Village Government building is at level D.

4.5 Analysis of Traffic Performance during Construction (Do-Something)

Traffic management and engineering that will be implemented to improve traffic performance around construction includes Traffic Flow Diversion; APILL Cycle Optimization; and Installation of Max Speed Limit Signs. Speed 20 km/h; Rumble Strip Installation; Installation of Warning Signs; Traffic Regulation by Officers; Setting Material Transport Hours (At Off Peak); Cleaning Dirty Road Sections Due to Materials Falling on the Road; Arrangement of Types of Material Transporting Vehicles According to Road Class; Warning Lamp Installation; Controlling Side Obstacles (On Street Parking and PKL), and others.

Table 5. Estimated travel pull generation during construction period

No	Indicator	Number	Descriptions
1	Employee Turnover		
	Number of employees	109	person
	Motor Percentage	85	%
	Car Percentage	15	%
	Number of Motorbikes	93	vehicle
	Number of Cars	16	vehicle
	Motorcycle Middle School	18.6	smp
	Car Middle School	16	smp
	Total	34.6	smp
2	Material vehicle		
	Concrete Mixer	4	vehicle
	Dump Trucks	2	vehicle
	HV Middle School	7.8	smp
3	Total Generation Generation during Construction	42.4	smp/hour

Source: Location analysis results, 2023
Note: smp = passenger car units

Table 6. Construction period journey matrix (Do Nothing)

O/D	1	2	3	4	5	6	Number
1	0	1351	531	400	0	9	2291
2	739	0	550	741	0	6	2036
3	0	1151	0	871	0	8	2030
4	459	670	442	0	1579	12	3162
5	0	0	0	1594	0	7	1601
6	8	2	12	9	11.50	0	42
Number	1198	3172	1523	3606	1579	42	11120

Source: Location analysis results, 2023

Table 7. Performance of road sections during construction (Do Nothing)

No	Road Section Name	Capacity Total (smp/hour)	Volume (smp/hour)	V/C Ratio	Speed (Km/hour)	Density (smp/km)	LOS
1	Tengkawang	5844	1730	0,29	54,5	3145.45	B
2	Teuku Umar	6148	2004	0,32	54,5	589.41	B
3	M. Said	1435	1077	0,75	24,5	347.42	D
4	MT Haryono Segmen 1	5432	1661	0,30	54,5	664.4	B
5	MT Haryono Segmen 2	5432c	1809	0,33	54,5	723.6	B
6	MT Haryono Segmen 3	5432	2086	0,38	54,5	834.4	B
7	Banggeris	1313	605	0,46	25,5	605	C
8	Suryanata Segmen 1	4978	1678	0,33	30	184.40	B
9	Suryanata Segmen 2	4978	1350	0,27	30	148.35	B
10	Juanda Segmen 1	5251	2619	0,49	40,5	1309.5	C
11	Juanda Segmen 2	5251	2513	0,47	40,5	1256.5	C
12	Juanda Segmen 3	5251	3428	0,65	40,5	1714	C
13	Wijaya Kusuma	1313	746	0,56	24,5	932.5	C
14	Antasari Segmen 1	5094	2263	0,44	41,5	1191.05	B
15	Antasari Segmen 2	5094	2290	0,44	41,5	1205.26	B

Source: Location analysis results, 2023
Note: smp = passenger car units

Table 8. Performance of intersections during construction (do nothing)

Name Street	Queue	Delay
Simpang Juanda	269,3	180,87
Simpang DPR	228,46	184,53

Source: Location analysis results, 2023

Fig. 5. Traffic performance during construction period (do nothing)
(Source: PTV Vissum analysis results, 2023)

Table 9. Performance of road sections during construction (do something)

No.	Road Section Name	Capacity Total (smp/hour)	Volume (smp/hour)	V/C Ratio	Speed (Km/hour)	Density (smp/km)	LOS
1	Tengkawang	5844	1730	0,29	54,5	3145.45	B
2	Teuku Umar	6148	2004	0,32	54,5	589.41	B
3	M. Said	1435	1077	0,75	24,5	347.42	D
4	MT Haryono Segmen 1	5432	1661	0,30	54,5	664.4	B
5	MT Haryono Segmen 2	5432	1809	0,33	54,5	723.6	B
6	MT Haryono Segmen 3	5432	2086	0,38	54,5	834.4	B
7	Banggeris	1313	605	0,46	25,5	605	C
8	Suryanata Segmen 1	4978	1678	0,33	30	184.40	B
9	Suryanata Segmen 2	4978	1350	0,27	30	148.35	B
10	Juanda Segmen 1	5251	2619	0,49	40,5	1309.5	C
11	Juanda Segmen 2	5251	2513	0,47	40,5	1256.5	C
12	Juanda Segmen 3	5251	3428	0,65	40,5	1714	C
13	Wijaya Kusuma	1313	746	0,56	24,5	932.5	C
14	Antasari Segmen 1	5094	2263	0,44	41,5	1191.05	B
15	Antasari Segmen 2	5094	2290	0,44	41,5	1205.26	B

Source: Location analysis results, 2023
Note: smp = passenger car units

Table 10. Performance of intersection sections during construction (Do Something)

Name Street	Queue	Delay
Simpang Juanda	270,21	110,96
Simpang DPR	189,61	79,82

Source: Location analysis results, 2023

Fig. 6. Traffic performance during construction period (do something)
(Source: PTV Vissum analysis results, 2023)

Table 11. Distribution of trips in building operational conditions without handling (do-nothing)

O/D	1	2	3	4	5	Number
1	0	1352	531	401	0	2284
2	742	0	550	742	0	2034
3	0	1151	0	872	0	2023
4	452	652	440	0	1556	3100
5	0	0	0	1584	0	1584
Number	1194	3155	1521	3599	1556	11025

Source: Location analysis results, 2023

Table 12. Performance of road sections in do-nothing building operational conditions

No.	Road Section Name	Capacity Total (smp/hour)	Volume (smp/hour)	V/C Ratio	Speed (Km/hour)	Density (smp/km)	LOS
1	Tengkawang	5844	1738	0,29	54,5	3160	B
2	Teuku Umar	6148	2012	0,32	54,5	591.76	B
3	M. Said	1435	1081	0,75	25,5	348.71	D
4	MT Haryono Segmen 1	5432	1640	0,30	54,5	656	B
5	MT Haryono Segmen 2	5432	1789	0,32	54,5	715.6	B
6	MT Haryono Segmen 3	5432	2067	0,38	54,5	826.8	B
7	Banggeris	1313	608	0,46	25,5	608	C
8	Suryanata Segmen 1	4978	1685	0,33	30	185.16	B
9	Suryanata Segmen 2	4978	1355	0,27	30	148.90	B
10	Juanda Segmen 1	5251	2593	0,49	40,5	1296.5	C
11	Juanda Segmen 2	5251	2486	0,47	40,5	1243	C
12	Juanda Segmen 3	5251	3405	0,64	40,5	1702.5	C
13	Wijaya Kusuma	1313	749	0,57	24,5	936.25	C
14	Antasari Segmen 1	5094	2244	0,44	41,5	1181.05	B
15	Antasari Segmen 2	5094	2272	0,44	41,5	1195.79	B

Source: Location analysis results, 2023
Note: smp = passenger car units

Table 13. Intersection performance in do-nothing building operational conditions

Street Name	Queue	Delay
Simpang Juanda	266,79	179,76
Simpang DPR	220,07	178,49

Source: Location analysis results, 2023

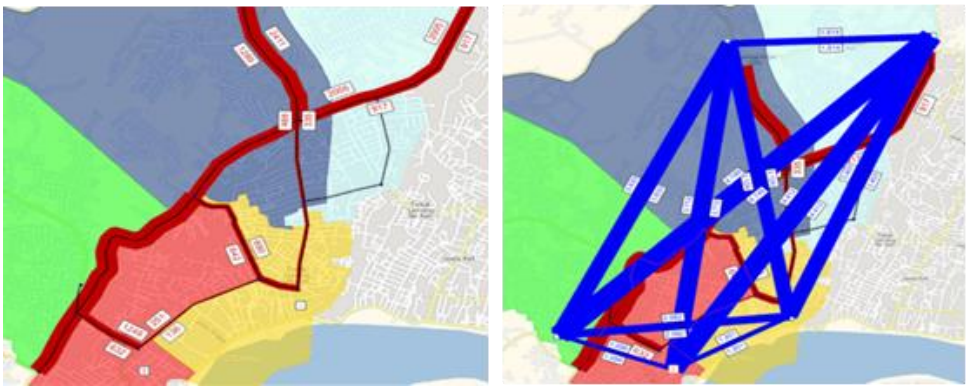

Fig. 7. Traffic performance for the operational period (do nothing) in 2024
(Source: PTV Vissum analysis results, 2023)

Fig. 8. Traffic performance for the operational period (do nothing) in 2030
(Source: PTV Vissum analysis results, 2023)

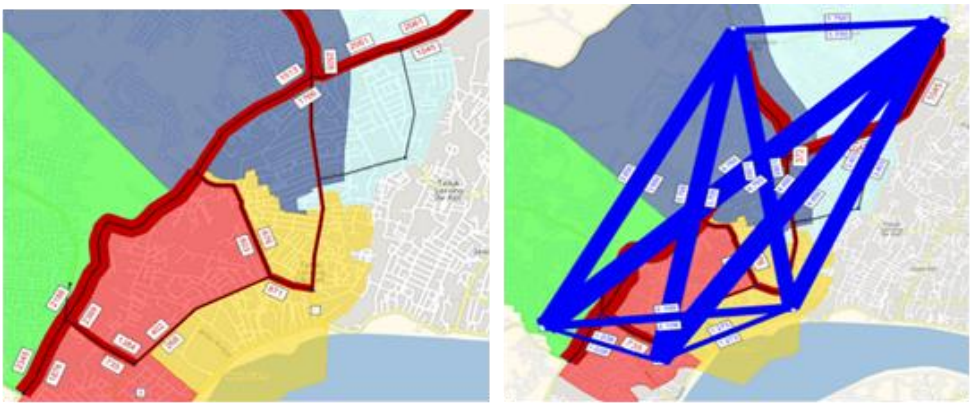

Fig. 9. Traffic performance for the operational period (do nothing) in 2034
(Source: PTV Vissum analysis results, 2023)

Based on Tables 9 and 10, information can be obtained that for conditions during construction (construction) in 2023 (Do Something) when the Village Government building is being built, there is a link that has a V/C ratio of 0.75, namely on Jalan M. Said. In general, almost all roads around the Village Government building location are still able to accommodate existing traffic with the lowest level of service (LOS) on the road sections around the Village Government building location being at level D.

4.6 Operational Period Traffic Performance (Do Nothing)

Initial analysis of the performance of the road network around the study location was carried out using a Do-Nothing scenario where the

characteristics of the road network were left as they were in the field by codifying the road network model and zoning in conditions where the Village Government building had been built and was operating. The distribution of Trips in Building Operational Conditions Without Handling (Do-Nothing) is presented in Tables 11, 12 and 13.

Based on the image above, information can be obtained that for the Do-Nothing condition when the construction of the Village Government Building has been completely replaced and is already operational, there is a link that has a V/C ratio of 0.75 (in 2024); V/C ratio 0.77 (2030); The V/C ratio is 0.78 (in 2034), namely Jalan M. Said with the lowest level of service (LOS) on the roads around the Village Government building location is at level D each year. Which means there are no significant changes.

4.7 Operational Traffic Performance (Do Something)

Traffic performance during the operational period by carrying out engineering activities on traffic resulted in the following conditions

Table 14. Performance of road sections in do-nothing (2034)

No.	Road Section Name	Capacity Total (smp/hour)	Volume (smp/hour)	V/C Ratio	Speed (Km/hour)	Density (smp/km)	LOS
1	Jl. Tengkawang	5844	1808	0,31	54,5	3287.27	B
2	Jl. Teuku Umar	6148	2096	0,34	54,5	616.47	B
3	Jl. M. Said	1435	1124	0,78	26,5	362.58	D
4	Jl. MT Haryono Segmen 1	5432	1706	0,31	52,5	682.4	B
5	Jl. MT Haryono Segmen 2	5432	1861	0,34	52,5	744.4	B
6	Jl. MT Haryono Segmen 3	5432	2151	0,39	52,5	860.4	B
7	Jl. Banggeris	1313	634	0,47	26,5	634	C
8	Jl. Suryanata Segmen 1	4978	1753	0,35	31,5	192.64	B
9	Jl. Suryanata Segmen 2	4978	1410	0,28	31,5	154.95	B
10	Jl. Juanda Segmen 1	5251	2698	0,50	40,5	1349	C
11	Jl. Juanda Segmen 2	5251	2587	0,49	40,5	1293.5	C
12	Jl. Juanda Segmen 3	5251	3542	0,67	40,5	1771	C
13	Jl. Wijaya Kusuma	1313	780	0,59	25,25	975	C
14	Jl. Antasari Segmen 1	5094	2335	0,45	41	1228.95	C
15	Jl. Antasari Segmen 2	5094	2303	0,46	41,5	1212.11	C

Source: Location analysis results, 2023

Table 15. Intersection performance in do-nothing (2034)

Nama	Antrian	Tundaan
Simpang Juanda	306,27	131,94
Simpang DPR	199,62	82,77

Source: Location analysis results, 2023

Table 16. Comparison of road segment performance 2022-2034

No.	Road Section Name	2022					2034				
		Eksiting Capacity Total (smp/hour)	V/C *Ratio*	Speed (Km/hour)	Density (smp/km)	LOS	10th year later Capacity Total (smp/hour)	V/C *Ratio*	Speed (Km/hour)	Density (smp/km)	LOS
1	Jl. Tengkawang	1724	0,29	54,5	3134.55	B	1808	0,31	54,5	3287.27	B
2	Jl. Teuku Umar	1996	0,32	54,5	587.06	B	2096	0,34	54,5	616.47	B
3	Jl. M. Said	1072	0,74	25,5	345.81	C	1124	0,78	26,5	362.58	D
4	Jl. MT Haryono Segmen 1	1627	0,29	54,5	650.8	B	1706	0,31	52,5	682.4	B
5	Jl. MT Haryono Segmen 2	1774	0,32	54,5	709.6	B	1861	0,34	52,5	744.4	B
6	Jl. MT Haryono Segmen 3	2051	0,37	54,5	820.4	B	2151	0,39	52,5	860.4	B
7	Jl. Banggeris	603	0,45	25,5	603	C	634	0,47	26,5	634	C
8	Jl. Suryanata Segmen 1	1671	0,33	30	183.63	B	1753	0,35	31,5	192.64	B
9	Jl. Suryanata Segmen 2	1344	0,26	30	147.69	B	1410	0,28	31,5	154.95	B
10	Jl. Juanda Segmen 1	2572	0,48	40,5	1286	C	2698	0,50	40,5	1349	C
11	Jl. Juanda Segmen 2	2466	0,46	40,5	1233	C	2587	0,49	40,5	1293.5	C
12	Jl. Juanda Segmen 3	3378	0,64	40,5	1689	C	3542	0,67	40,5	1771	C
13	Jl. Wijaya Kusuma	743	0,56	24,5	928.75	C	780	0,59	25,25	975	C
14	Jl. Antasari Segmen 1	2226	0,43	41,5	1171.58	B	2335	0,45	41	1228.95	C
15	Jl. Antasari Segmen 2	2253	0,44	41,5	1185.79	B	2303	0,46	41,5	1212.11	C

Source: Location analysis results, 2023

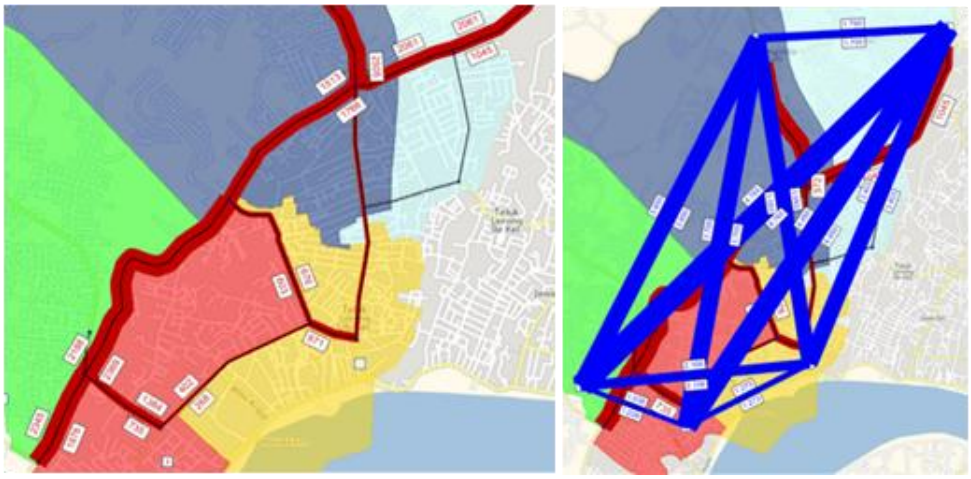

Fig. 10. Traffic performance for the operational period (do something) 2034
(Source: PTV Vissum analysis results, 2023)

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Based on the results of the analysis and discussion, it can be concluded as follows:

1. Based on Law number 22 of 2009 article 99 paragraph 1, it is stated that "Every plan for the development of activity centers, settlements and infrastructure that will disrupt security, safety, order and the smoothness of traffic and road transport must undergo a traffic impact analysis".
2. Based on Minister of Transportation Regulation No. 17 of 2021, it is stated that the construction of the Village Government office is in the small construction category with a building area between 1,000 m2 to 4,000 m^2.
3. The results of the study on the impact of the construction of the Village Government Office as a result of PTV Vissum modeling on increasing traffic growth every year until 2034, also did not cause a significant decrease in the performance and level of service of a road section or intersection around the research location with an average value LOS is D.
4. Traffic management and engineering that will be implemented to improve traffic performance during the construction period around the construction of the Community Empowerment Office and Village Government, including: Installation of Max Speed Limit Signs. Speed 20 km/hour, Installation of Rumble Strips, Installation of Warning Signs, Traffic Regulation by Officers, Setting Material Transport Hours (On Off Peak), Cleaning Dirty Road Sections Due to Materials Falling on the Road, Setting Types of Material Transporting Vehicles According to Road Class, and Installation of Warning Lights.
5. Traffic management and engineering that will be implemented to improve traffic performance in the construction of Community Empowerment Service Offices and Village Government during the operational period, include: Maintenance of dirty or obstructed traffic signs, Installation/Painting of Road Markings, Installation of equipment roads, and Installation of Public Street Lighting (PJU).

5.2 Suggestions

Even though the traffic impact is not that significant, of course, an analysis of the traffic impact must be carried out to create sustainable and well-implemented development, so efforts are made to maximize the level of safety and comfort for road users around the activity area using vehicle circulation., pedestrian facilities, signs or markings, and traffic engineering management, as well as other safety and comfort supporting facilities.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image

generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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