

# Risk Assessment on Toll Road Asset Management

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## Abstract

One of the purposes from this study is to assess risks on the asset management. This research focused on management asset of toll road which using road ledger. The method is by looking at their suitability with the Road Asset Management System (RAMS). RAMS is a road management system implemented in developed countries such as Japan and Australia. On the other hand, this study looks at the risk management of the asset management activities. The object of this research is one of the government assets of the Ministry of PUPR, named the JORR II Toll Road Cengkareng - Batuaceper - Kunciran Toll Road. This research is qualitative research with data collection techniques, using document review. The results of the study shows that asset management has been carried out on JORR II Toll Road assets through road ledgers that are in accordance with the components and rules of the RAMS. Asset management on toll road assets is very important to keep good records as accountability and to become legal documents. Furthermore, the main activities on the roadside have taken into account the risks that have the potential to arise, however, periodic evaluations and improvements still need to be carried out if needed in the future.

**Keywords:** asset management, toll road assets, RAMS, road ledger, risk management

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## 1. Introduction

Along with accelerating infrastructure development in Indonesia, the government is constructing toll roads as access to inter-regional connectivity. The government, through the Ministry of PUPR, is working with the Toll Road Business Entity (BUJT) to carry out toll road construction through a build-to-handover mechanism. BUJT will provide toll road assets to the government after the concession period ends following a predetermined contract, so it is very important to carry out good toll road asset management as a document for recording the history of toll road assets and the infrastructure inside.

The PUPR Ministry together with BUJT has also carried out toll road asset management through road ledgers. Road ledger is carried out to determine the development of a road section which includes legal, technical, and financing aspects, complementary buildings, road equipment, utility buildings, and their utilization. One of the toll road sections that have been road-walked is the Jakarta Outer Ring Road II (JORR) II Cengkareng-Batuaceper-Kunciran Toll Road.

In developed countries such as Japan and Australia, they have implemented asset management on roads, namely the Road Assets Management System (RAMS). RAMS is a road asset management system, which is carried out by collecting road data, recording, utilization, maintenance, and so on (Jamshid, 2015). RAMS has 5 components that can be used as parameters or references for recording road assets.

The purpose of this study is to further analyse the asset management that has been carried out through road ledger on the assets of the Jakarta Outer Ring Road II (JORR) II Toll Road Cengkareng-Batuaceper-Kunciran Section, whether it is following the components of the RAMS system implemented in developed countries. In addition, risk management will be carried out on roadside activities on the toll road assets. This aims to see the risks that may arise and how to overcome them. The research method used is a descriptive qualitative method, with document review data collection techniques.

## 2. Key Concept

### 2.1 Strategic Asset

Strategic assets are efforts made to manage owned assets and make optimal use of them for entity activities. Strategic asset management has specific and uncertain characteristics in the long run, so strategic asset competency must always be maintained. These strategic assets can be categorized into larger groups such as financial assets, physical assets, technological assets, intangible assets, and human capital assets (Grant, 1991 in Widodo & Widjanti, 2018).

### 2.2 Financial Management

One of the keys for a business or organization to survive in its environment is its financial management. The definition of financial management itself is an entity's business, both an organization or a company, in planning finances, managing assets, storing funds, and controlling the assets and funds of these entities (Podomoro, 2022).

### 2.3 Asset Management

Asset management is a systematic process starting from the stages of maintaining, upgrading, and operating physical assets in a cost-effective manner (Irawan, 2019). This must be done to carry out the orderly administration of the management of state and regional property.

### 2.4 Road Asset Management (RAMS)

RAMS is a new concept introduced for developed and developing countries that are useful for helping to record, record and maintain road assets by conducting a review from 4 main perspectives, namely objectives, budget, assets, and performance. One of the key factors in economic, mobility, and social development in a country is determined by the transportation asset infrastructure owned (Jamshid, 2015).

### 2.5 Road Leger

The definition of road leger according to the Regulation of the Minister of Public Works Number 78 of 2005 concerning Road Leger, Road leger activity is an attempt to find out the development of certain road sections which include technical fields, financing, utility buildings, road equipment, auxiliary buildings, law, and their utilization.

### 2.6 Risk Management

Risk is the opportunity for an event or incident to occur that can interfere with the achievement of organizational goals. This is stated in the PUPR Minister's Circular Number 04 of 2021 concerning Guidelines for Implementing Risk Management at the Ministry of Public Works and Public Housing. While the definition of risk management is a series of processes of identifying, evaluating, managing, and controlling events or potential events that may occur, to provide adequate assurance regarding the achievement of organizational goals. In carrying out risk management, risk profile mapping is used which is contained in the following table image,

Table 1. Risk Profile Mapping

5x5 risk analysis matrix		Impact Rate				
		1 Not significant	2 Minor	3 Moderate	4 Significant	5 Very Significant
Level Possibility	5 Almost certain to happen	11	15	18	23	25
	4 Often	6	12	16	19	24
	3 Sometimes	4	8	14	17	22
	2 Seldom	2	7	10	13	21
	1 Almost never	1	3	5	9	20

Tolerance Line

## 3. Research Framework

We have showed the research framework following on the figure 1:

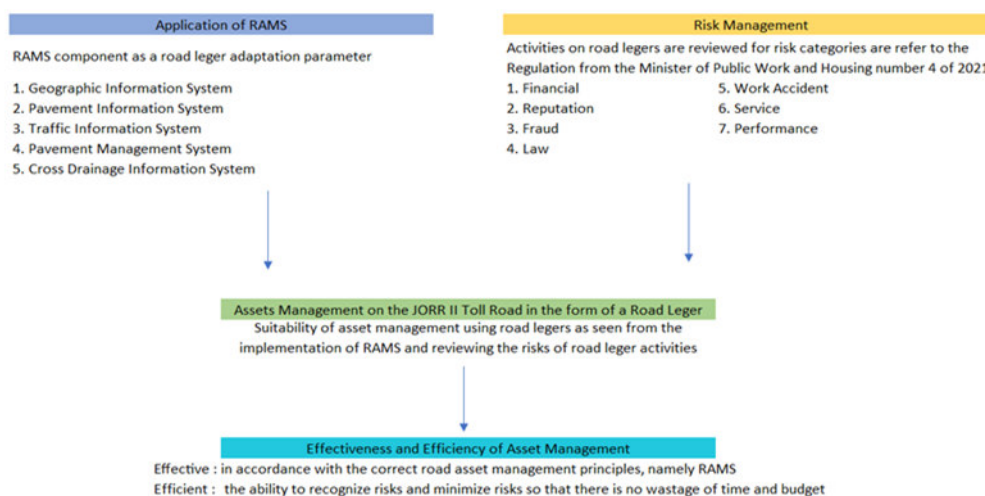


Figure 1. Research Framework

This study uses a descriptive qualitative method, namely to review the important role of carrying out asset management by looking at it from the perspective of risk management on toll road fixed assets. Data collection techniques carried out by researchers are using secondary data sources through document review. This research

will focus on reviewing road ledger documents to see the asset management being carried out, RAMS adaptation and risk management

## 5. Result and Discussion

### 5.1 General Description

The Public Work and Housing Ministry has one of the duties and functions of formulating, stipulating, and implementing policies in the field of road administration, including toll roads. The more toll roads that are built, the budget required for maintenance also increases. However, due to budget constraints for road maintenance, there is a lot of road damage that is not handled. This requires good asset management to inventory road assets and their infrastructure, namely road ledgers, so that the government can prioritize road repairs based on the history of the road sections recorded in the road ledgers. Data on toll road assets in Indonesia, as of September 20 2022, amounted to 69 sections, consisting of 28 sections that have not been legislated, 7 sections are still in the ledger process and 34 have been legered (some are in the process of being updated).

#### 5.1.1. The 1st Component of RAMS : Geographic Information System (GIS)

- Geographic Information System provides information regarding the coordinates of road assets and the things that are in them. Obtained from the road alignment (center line) captured by the GPS signal.
- Obtained road ledger data: contains all road data, such as the location of land, roads, safety buildings and road accessories, road equipment, public utilities, toll road operational buildings; waypoint description

Road Identity Data	Origin/Date : 2021		
The name of the road/section	: JORR II Toll Road Cengkareng - Batuceper - Kunciran Section		
Road length	: 13.88 KM		
Location at the beginning of the road section	: CGK KM. 0+000		
Description of the start point of the segment	: Right on the mark KM 0+000		
Coordinates of the start point of the segment	X: 686730.440	Y: 9323717.270	Z: 7.950
Location at the end of the road section	: CGK KM. 13+880		
Description of the end point of the segment	: In the middle of Kunciran Junction		
Coordinates of the end point of the segment	X: 684466.142	Y: 9312431.350	Z: 27.794
Road network system	: Primary		
Road role	: Arterial Road		
Road Status	: Toll		
Street Class	: 1st class		
Due diligence date	: 31 March 2021		
Road operator	: Minister of Public Work and Housing		
Toll road company	: PT Jasamarga Kunciran Cengkareng		
Concession start date	: 22 March 2017		
Concession end date	: 22 March 2052		

Figure 2. Road Leger Data – Street Identity Data

#### 5.1.2 The 2nd Component of RAMS : Pavement Information System (PIS)

- Pavement Information System provides information about the path through the database on the hardware (eg computer). This information is useful for managing assets, which forms the basis for estimating budgetary requirements for road maintenance and development. Types of information include: pavement type, pavement widening, shoulder details, pavement composition, pavement condition.
- Obtained road ledger data: contains all road data, such as the location of land, roads, safety buildings and road accessories, road equipment, public utilities, toll road operational buildings; waypoint description.

Table 2. Rumija Land and Pavement at KM 2+655 s.d. KM 3+000

Description	Origin / Year : 2021		
	Wide (M2)	Acquisition Data	Acquisition Value (IDR)
Street House ( Rumija Land)	22.488,58	Field Review Results	93.805.184
Road Pavement	10.718,09	Field Review Results	42.912.940

	Left Lane		Right Lane	
	Outside	Inside	Outside	Inside
Wide (M)	3,00	1,50	1,50	3,00
Thick (M)	0,56	0,56	0,56	0,56
Type	ATB (Asphalt Treated Base)	Concrete	Concrete	ATB (Asphalt Treated Base)
Position	Flat	Flat	Flat	Flat
Condition	Good	Good	Good	Good

Construction Description	Left Lane				Right Lane			
	1st Lane	2nd Lane	3rd Lane	4th Lane	4th Lane	3rd Lane	2nd Lane	1st Lane
Surface Layer								
- Condition	Perfect	Perfect	Perfect	-	-	Perfect	Perfect	Perfect
- Condition Index/IRI	2.1/4.6	2.1/4.6	2.1/4.6	-	-	2.1/4.6	2.1/4.6	2.1/4.6

5.1.3 The 3rd Component of RAMS : Traffic Information System (TIS)

- Traffic Information System provides information on the number of Commercial Vehicles Per Day, Annual Average Daily Traffic, Vehicle Damage Factor. TIS Benefits:
  - a.Designing the thickness of the pavement, the need for additional lanes, the thickness of the overlay or resurfacing
  - b.Toll contribution or rates adjustment
- Obtained road ledger data: recording of daily traffic vehicles has been carried out as shown in the following table 5.

Table 5. Road Leger Data over TIS

Groups	KMS +2.655 until KMS 13+880			
	ADR (Left/Day)	Rates (Rp)	ADR (Right/Day)	Rates (Rp)
Group I ( sedans, pickups, jeeps, buses)	7.977	22.500	7.977	25.500
Group II (Truck with 2 axles)	481	38.000	481	38.000
Group III (truck with 3 axles)	416	38.000	416	38.000
Group IV (Truck with 4 axles)	87	51.000	87	51.000
Group V (Truck with 5/more axles)	42	51.000	42	51.000
Group VI (2 wheeler)	-	-	-	-

\*ADR (average daily rate)

5.1.4 4th Component of RAMS : Pavement Management System (PMS)

- Pavement Management System provide information regarding work programs that may be carried out optimally (effectively and efficiently) within the next 5-10 years. Road maintenance planning if there is a traffic volume exceeding the given capacity later.
- The road ledger data obtained is as follows 6

Table 6. Capital Expenditure Realization Data

Main Activities	Origin/Year : 2021			
	Service Provider	Count (M, M2, M3)	Cost (IDR)	Source of Funds
Design	Cipta Strada Inc.	STA 25+600 - STA 39+789	6.204.385.000	BUJT
Construction	Wijaya Karya Tbk Inc.	STA 25+600 - STA 39+789	3.270.698.299.792	BUJT
Supervision	Cipta Strada Inc.	STA 25+600 - STA 39+789	39.049.533.000	BUJT
Independent Quality Controller	Jaya CM Inc.	STA 25+600 - STA 39+789	14.467.394.000	BUJT

Road Toll ledger data of JORR II at Cengkareng – Batuaceper – Kunciran Section :

Useful Life : 35 Years  
 Road Type : Toll  
 Pavement Width : 2 x 10,8  
 Pavement Type : Concrete  
 Road Width (M2) : 564.061,01  
 Roadside Width (M) : 2 x 4,50

### 5.1.5 The 5th Component of RAMS : Cross Drainage Information System

- Cross Drainage Information System provide information about cross-drainage systems, such as bridges and culverts, so that traffic is not interrupted in the road network due to the cross-drainage. Periodic and detailed monitoring of structures helps in timely maintenance and evaluates the costs required.
- Data The road leger data obtained is as follows

Table 7. Water Tunnel, Permanent Ways, and Underground Drainage Data

Description of safety and auxiliary	1st			2nd	3rd	4th
a. Water tunnel						
Material type	Concrete			Concrete	Concrete	Concrete
Length size (unit/M)	29/900,20			17/520,69	9/467,54	5/257,26
Condition	Good			Good	Good	Good
	Left	Middle	Right			
b. Permanent ways						
Material type	Concrete	Concrete	Concrete			
Length size (unit/M)	52/10.824,69	16/8,849,87	64/11.330,76			
Condition (unit/M)	Good	Good	Good			
c. Underground drainage						
Material type	Concrete	-	Concrete			
Length size (unit/M)	2/371,44	-	4/100,97			
Condition (unit/M)	Good	-	Good			

### 6.1 The 1st Component: Geographic Information System (GIS) with road leger data

The JORR II Toll Road Leger Data provides information on the location of sections from the start point to the end point. The conclusion obtained is that the road leger fulfills the 1st RAMS component. Based on the discussion of component 1 with road leger data, it can be seen that it is very important to know the accuracy of the location of a road section, so that the risk management for the first component of this road leger is The Location of the JORR II Toll Road Asset Section, Cengkareng - Batuceper - Kunciran Section, which is accurate and precision.

### 6.2 The 2nd Component: Pavement Information System (PIS) with road leger data

The JORR II Toll Road Leger Data provides information on road pavement conditions, one of which is through the PCI index. Conclusion: the road leger fulfills component 2 RAMS. This is very useful for carrying out budget planning so that budget inefficiencies do not occur when preserving and repairing damaged roads, or developing roads when needed. Furthermore, risk management in this second component, namely, Complete Road Pavement Information, as well as Accurate Condition Values for the JORR II Toll Road Section Cengkareng - Batuceper - Kunciran.

### 6.3 The 3rd Component: Traffic Information System (TIS) with road leger data

The TIS component provides information on the number of vehicles that cross a road section every day and on average in one year. In addition, it also provides details on the rates charged to vehicles crossing the toll road according to their class. It was concluded that the road leger data fulfills the 3rd RAMS component, namely the Traffic Information System (TIS). Then risk management in TIS activities, namely the Calculation of Vehicle Traffic and Toll Fares on the JORR II Toll Road Cengkareng - Batuceper - Kunciran Section which is correct and actual.

### 6.4 The 4th Component: Pavement Management System (PMS) with road leger data

From this component, interrelated information is obtained regarding the road pavement information system database, GIS and TIS. The conclusion from this research is that the road leger data fulfills the 4th RAMS component, namely the Pavement Management System (PMS). Furthermore, risk management for the leger component of this road is Good and Accountable Management System for Asset Management for the JORR II Toll Road Section Cengkareng - Batuceper - Kunciran.

### 6.5 The 5th Component: Cross Drainage Information System with road leger data

This component provides information about cross-drainage systems in the road network, such as culverts, permanent canals, and underground drainage. The conclusion from this research is that the road leger data meets the 5th RAMS component, namely the Cross Drainage Information System. Risk management in the main activities taken from this component is Complete and Accurate Cross Drainage System.

Based on this discussion, it can be concluded that the RAMS and road leger components are in accordance with the Strategic Asset theory, where the approach includes recording and managing the assets themselves and the process of managing these assets. This also covers financial management when carrying out financial management of asset management and risk management in these activities.

## 7. Risk Management over Road Leger

Furthermore, from the discussion of the 5 RAMS components above with the road leger data, it was found that the main activities to assess risk management that had been carried out on the road leger had been carried out by the Ministry of Public Works and Housing. This risk management is carried out for 5 main activities in accordance with the RAMS component, by conducting risk assessment and risk mapping in accordance with the Minister of PUPR Circular Number 04 of 2021 concerning Guidelines for Implementation of Risk Management in the Ministry of Public Works and Housing. The following will be presented in a table regarding the risk assessment of each of the main activity components.

## 8. Conclusion

In Indonesia, through the Ministry of Public Works and Public Housing, it has carried out asset management by carrying out street walkers, in accordance with Minister of Public Works and Public Housing Regulation Number 78 of 2005 concerning Street Legers. The regulation regulates asset management from the recording of road assets to the infrastructure on the road assets.

Asset management carried out on road assets in developing countries needs to adopt a Road Asset Management System (RAMS). In the research conducted, the road leger recording components on the Jakarta Outer Ring Road (JORR) II Toll Road section Cengkareng - Batuceper - Kunciran are in accordance with the RAMS component.

In Indonesia, through the Ministry of PUPR, it has carried out asset management by carrying out road legers, in accordance with PUPR Ministerial Regulation Number 78 of 2005 concerning Road Legers. The regulation regulates asset management from the recording of road assets to the infrastructure on the road assets.

Researcher give additional suggestions: 1. There needs to be a more detailed explanation as well as a more informative explanation regarding the road leger so that stakeholders with both technical and non-technical backgrounds can use the information on the road leger to assist decision making; 2. Asset management in the form of road legers needs to be carried out for all road sections in Indonesia, both regional, provincial, national and toll roads, this is very useful for asset inventory. RAMS implementation on road legers also needs to be done because its components already include all the information needed; 3. It is necessary to form a special team to supervise the implementation of road legers and the application of a risk management framework needs to be carried out to identify, assess, monitor risks for unexpected events to occur, so that they can help control the possibility of these events occurring

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## Appendix

**Table 1. Leger Road Risk Management Assessment of Component 1 (RAMS)**

No	Main Activities Objectives	Risk Statement	Risk Categories	Reason	Inherent Risk			Existing Control		Risk Value				Risk Priority	Response of Risk	Innovation of Control	Resource Allocation	Respond to Risk			Responsible	Time Targets	Output
					P	I	Mark	Description	Sufficient/Not Yet	P	I	Mark	P					I	Mark	P			
1	Location of JORR II Toll Road Assets Section Cengkareng - Batuceper - Kunciran Section Accurate and Precision.	Loss of Road Assets in the Field Includes Area of Land, Parts, Complements, and Road Equipment.	Financial risk			5	5	25	Law No. 2 of 2022 concerning Roads; PUUR Ministerial Regulation No. 30 of 2020 concerning Security of State Property.	Sufficient	4	4	19	1	Law No. 4 of 2011 Concerning Geospatial Information; Minister of Public Works and Housing Regulation No. 78 of 2005 Concerning Leger Jalan.	Measure each existing asset with high accuracy and put it in a Road Leger Document	Private/BUIT Budget	1	2	3	BUIT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents
		Irregular Asset Recording.	Performance risk	Not measuring, mapping, and recording the situation of assets in a proper, accurate and precise manner.		4	4	19	Order Regulation No. 28 of 2020 concerning Management of State Property.	Sufficient	3	3	14	5	PMK No. 215/PMK.05/2016 concerning Changes to the Minister of Finance Number 213/PMK.05/2013 concerning Central Government Financial Accounting and Reporting Systems; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Report every realization of Capital Expenditure and report it to the Ministry of PUUR and include it in the Road Leger Document as a compilation of assets.	State Budget and Private/BUIT Budget	1	2	3	BUIT and Ministry of Public Work and Housing	Quarterly and During the concession period	The latest Asset Recording Report and Road Leger Documents
		Land Boundary between Assets Owners and the Community is Unclear.	Law risk			4	5	24	Order Regulation No. 18 of 2021 concerning Management Rights, Land Rights, Flats Units, and Land Registration.	Sufficient	3	3	14	2	Law No. 4 of 2011 concerning Geospatial Information; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Take measurements accurately and precisely according to Leger Road rules.	Private/BUIT Budget	1	1	1	BUIT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents

**Table 2. Leger Road Risk Management Assessment of Component 2 (RAMS)**

No	Main Activities Objectives	Risk Statement	Risk Categories	Reason	Inherent Risk			Existing Control		Risk Value				Risk Priority	Response of Risk	Innovation of Control	Resource Allocation	Respond to Risk			Responsible	Time Targets	Output
					P	I	Mark	Description	Sufficient/Not Yet	P	I	Mark	P					I	Mark	P			
2	Pavement Information that is Informative, Complete, and Accurate in Assessing the Condition of the JORR II Toll Road Cengkareng - Batuceper - Kunciran Section.	Damaged Pavement Layers.	Service risk			5	5	25	Ministry of Public Works No. 11 of 2010 concerning Procedures and Requirements for Road Functionality; Minister of Public Works Regulation No. 16 of 2014 concerning Toll Road Minimum Service Standards.	Sufficient	4	3	16	10	Minister of Public Works and Housing Regulation No. 13 of 2011 concerning Procedures for Maintenance and Surveillance of Roads; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Conduct periodic surveys and include the latest road condition values on the Road Leger Document.	Private/BUIT Budget	2	2	7	BUIT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Latest Minutes of Payment Orders and Road Leger Documents
		Incompatibility of the Age of the Road Plan with the Existing Field.	Performance risk	Not monitoring road pavement conditions, recording the initial and current condition of the pavement layer, as well as recording budget reports that are realized to improve road quality.		4	5	24	Ministry of Public Works No. 11 of 2010 concerning Procedures and Requirements for Road Functionality.	Sufficient	3	3	14	11	Minister of Public Works and Housing Regulation No. 16 of 2014 concerning Standart Pelayanan Minimal Jalan Tol; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Conduct road service assessments and tests and include them in the Road Leger Document as a road history.	Private/BUIT Budget	1	2	3	BUIT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Latest Minutes of Payment Orders and Road Leger Documents
		There is no Asset Value Added Report in terms of Road Quality Maintenance/Improvement.	Financial risk			5	4	23	Order Regulation No. 28 of 2020 concerning Management of State Property.	Sufficient	4	3	16	13	Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Perform asset value recapitulation (area, volume, and price) according to the Road Leger Document.	Private/BUIT Budget	1	2	3	BUIT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents

**Table 3. Leger Road Risk Management Assessment of Component 3 (RAMS)**

No	Main Activities Objectives	Risk Statement	Risk Categories	Reason	Inherent Risk			Existing Control		Risk Value			Risk Priority	Response of Risk	Innovation of Control	Resource Allocation	Respond to Risk			Responsible	Time Targets	Output
					P	I	Mar	Description	Sufficient	NOK	P	I					Mark	P	I			
3	Calculation of Vehicle Traffic on the JORR II Toll Road (Cengkareng - Batucaep - Kunciran Section Correct and Actual.	Incompatibility of Road User Targets Between Plan and Implementation	Performance risk	There is no monitoring and evaluation of vehicles crossing the Toll Road Sections and reporting them in the road history record	4	5	24	President Regulation No. 75 of 2014 concerning the Acceleration of Priority Infrastructure Provision; Minister of Public Works Regulation No. 11 of 2010 concerning Procedures and Requirements for Road Functionality.	Sufficient	3	3	14	4	Minister of Public Works and Housing Regulation No. 16 of 2014 concerning Standart Pelayanan Minimal Jalan Tol; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Periodically record the target road users and compare the ADFR plan data when the toll road is built with data every year and recorded in the Road Leger Document.	Private/BLUT Budget	1	1	1	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Latest Minutes of Payment Orders and Road Leger Documents
					5	5	25	Law Number 22 of 2009 concerning Road Transportation Traffic; Regulation of the Minister of Transportation Number 134 of 2015 concerning the Implementation of Weighing Motorized Vehicles on the Road; Minister of Public Works Regulation No. 11 of 2010 concerning Procedures and Requirements for Road Functionality.	Sufficient	4	4	17	7	Minister of Public Works and Housing Regulation No. 16 of 2014 concerning Standart Pelayanan Minimal Jalan Tol; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Carry out restrictions on vehicles that do not comply with road safety specifications in accordance with the results of a survey on the Road Leger Document.	State Budget and Private/BLUT Budget	3	3	14	BLUT and Ministry of Public Work and Housing	During the concession period	Latest Minutes of Payment Orders
					4	5	24	President Regulation No. 75 of 2014 concerning the Acceleration of Priority Infrastructure Provision; Minister of Public Works Regulation No. 11 of 2010 concerning Procedures and Requirements for Road Functionality.	Sufficient	2	3	10	9	Minister of Public Works and Housing Regulation No. 16 of 2014 concerning Standart Pelayanan Minimal Jalan Tol; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Making and updating Road Leger Documents because it is one of the administrative requirements for the Road Function Worthiness Test to increase toll rates.	State Budget and Private/BLUT Budget	1	2	3	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Latest Minutes of Payment Orders and Road Leger Documents

**Table 4. Leger Road Risk Management Assessment of Component 4 (RAMS)**

No	Main Activities Objectives	Risk Statement	Risk Categories	Reason	Inherent Risk			Existing Control		Risk Value			Risk Priority	Response of Risk	Innovation of Control	Resource Allocation	Respond to Risk			Responsible	Time Targets	Output
					P	I	Mar	Description	Sufficient	NOK	P	I					Mark	P	I			
4	Good and Accountable System Management for JORR II Toll Road Asset Management (Cengkareng - Batucaep - Kunciran Section.	There is no Report of Tangible and Intangible Assets	Performance risk	There is no accountable and detailed data management that records the compilation of all managed assets	5	5	25	Government Regulation No. 28 of 2020 concerning Management of State Property; Government Regulation Number 71 concerning Government Accounting Systems; PSAP 07 concerning Fixed Assets;	Sufficient	4	4	16	3	PKK No. 2/96/PPK/09/2016 concerning Changes to the Minister of Finance Number 2/2016/PPK/09/2016 concerning Central Government Financial Accounting and Reporting Systems; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Record assets compiled on the Road Leger Document including tangible assets (land area, road buildings, bridges, etc.) and intangible assets (planning, construction, supervision services, etc.).	State Budget and Private/BLUT Budget	1	1	1	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	The latest Asset Recording Report and Road Leger Documents
					4	5	24	Regulation of the Director General of Taxes Number Per-10/PJ.005 concerning Procedures for Value Added Tax on the Delivery of Toll Roads; PP No. 28 of 2020 concerning Management of State Property.	Sufficient	3	4	17	8	PKK TPKK. 010/2020 concerning Implementation of Government Regulation Number 78 of 2019 concerning Income Tax: Facilities for Investment in Certain Business Fields and/or in Certain Regions; Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Record assets compiled on Leger Jalan Documents and based on regulations, the area or volume listed can be the basis for imposition of tax in accordance with the boundaries of the area (District/Village/Kelurahan).	State Budget and Private/BLUT Budget	3	3	14	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	The latest Asset Recording Report and Road Leger Documents
					5	5	25	Government Regulation No. 28 of 2020 concerning Management of State Property; Regulation of the Minister of Public Works No. 20/PR/TH/2010 concerning Guidelines for Utilization and Use of Road Sections	Sufficient	3	3	14	6	Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Record assets compiled on the Road Leger Document including a situation map and the total number of assets located and/or below ground level such as gas pipes, water pipes, SUTET, billboard, billboards, etc.	Private/BLUT Budget	2	2	7	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents

**Table 5. Leger Road Risk Management Assessment of Component 5 (RAMS)**

No	Main Activities Objectives	Risk Statement	Risk Categories	Reason	Inherent Risk			Existing Control		Risk Value			Risk Priority	Response of Risk	Innovation of Control	Resource Allocation	Respond to Risk			Responsible	Time Targets	Output
					P	I	Mar	Description	Sufficient	NOK	P	I					Mark	P	I			
5	Complete and Accurate Cross Drainage System.	Unknown Assets in Invisible Ground	Financial risk	There is no situation map for any drainage and road assets that are not visible or underground after the construction of roads and bridges is installed	4	5	24	SOP/PMO/EM-103 Rev/01 Standard Operational Procedure for Submission of Final Drawings (As Built Drawings); Order Regulation No. 28 of 2020 concerning Management of State Property.	Sufficient	3	4	17	4	Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Record assets compiled on the Road Leger Document including a situation map and the total number of assets located and/or below ground level such as pipes, canals, manholes, and drainage systems that pass through them.	Private/BLUT Budget	2	2	7	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents
					4	5	24	SOP/PMO/EM-103 Rev/01 Standard Operational Procedure for Submission of Final Drawings (As Built Drawing); Minister of Public Works Regulation No. 11 of 2010 concerning Procedures and Requirements for Road Functionality.	Sufficient	3	4	17	12	Minister of Public Works and Housing Regulation No. 78 of 2005 concerning Leger Jalan.	Map the situation and include it in the Road Leger Document as information that there are assets under and/or on the ground in the form of drainage and the like for the suitability of the existing construction development plan.	Private/BLUT Budget	2	3	10	BLUT and Ministry of Public Work and Housing	A maximum of 5 years and during the concession period	Up to date Leger Road documents