

Study Line Riparian: Case Study Of Citanduy River Downstream Of West Java

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ABSTRACT

In the Regulation of the Minister of Public Works Number 63 in 1993, Riparian is "the area along the right and left bank (including artificial river) which is limited by the riparian line and has important benefits to maintain the preservation of the river". Thus the river should be protected and preserved; enhanced functionality and practicality, as well as controlled negative impact are likely to occur. Therefore it is necessary to set riparian line of the river in order to realize the benefits of river and stream damage control. This study begins with a study of the literature on the riparian line of the river that originates from the laws that exist in Indonesia and take inventory along the river. Under the legislation on riparian line of the river is used as the legal basis in determining the riparian line of the river, then to facilitate the study, made the types of riparian line streams corresponding field conditions. The end result of this research is planned riparian line of the river, the land area is in the line of riparian (land should be released) and maps of riparian area.

Keywords: river, riparian line, legislation

INTRODUCTION

In the Regulation of the Minister of Public Works Number 63 in 1993 [1] on the Riparian line, Regional benefit stream, river and Used Mastery Regional River, Border Rivers is "area along the right and left bank (including artificial river) which is limited by the riparian line and have important benefits to maintain the preservation of the river ". While riparian line is a virtual line in the left and right of the riverbed are set as boundary river protection. Thus the river should be protected and preserved; enhanced functionality and practicality, as well as controlled negative impact are likely to occur. Therefore it is necessary to set riparian line of the river in order to realize the benefits of river and stream damage control. Furthermore, this riparian line

will serve as guidelines for policy makers in the activities of utilization and protection of the river as well as the residential boundary in the area along the river

Riparian boundary can be determined based on three aspects [2], namely: 1). Technical aspects related to the risk of flooding and landslide risks cliffs; 2). Conservation aspects, relating to the protection of rivers from pollution: 3). Social and community aspects, related to the security of the river to the community activities that can consist of encroachment along the river due to high population pressure, the use of banks for agriculture / plantation, economic activity and others.

This study begins with a study of the literature on the riparian line of the river that originates from the laws that exist in Indonesia and take inventory along the river [3]. Guided by these regulations, formulated and used as consideration for assessing riparian line determination. The field survey was conducted to obtain the relationship between the width riparian with transverse river morphology, ecology riverside vegetation and the water level of the river hydraulic factors. Under the legislation on riparian line of the river is used as the legal basis in determining the riparian line of the river, then to facilitate the study, made the types of riparian line streams corresponding field conditions. The end result of this research is planned riparian line of the river, the land area is in the line riparian (land should be released) and riparian area map

MATERIALS AND METHODS

This research was conducted in the river of Citanduy downstream the District of Tasikmalaya, Ciamis and Banjar, West Java Province, Indonesia. Location of the research is presented in Figure 1.

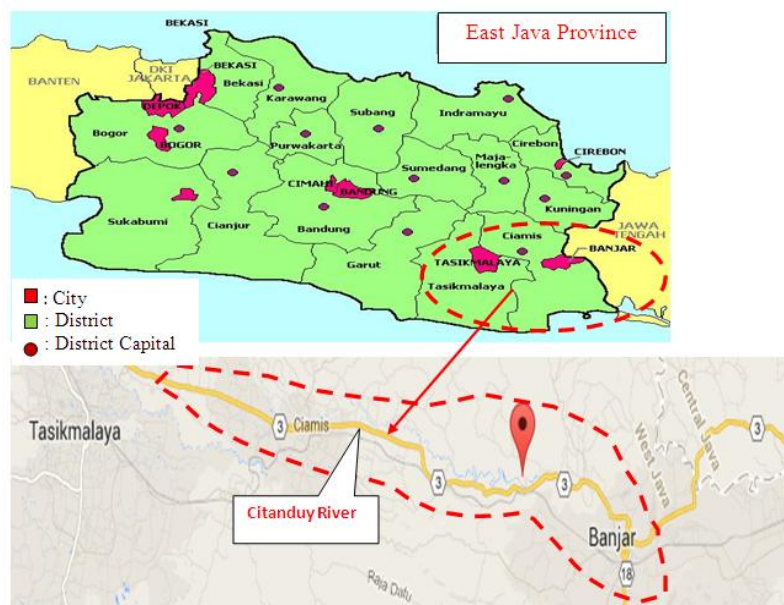


Figure 1. Location of the research

The research was conducted in the following order:

1. Identify the width riparian by Indonesian government regulations
2. Survey the field by identifying morphology cross sections of the rivers, hydraulic water level of the river, and the river bank vegetation characteristics
3. Identify the cross section of the river by measuring topography. With the look of a cross section measurement results can be studied and determined where the location by the river and riparian width.
4. Identify the long section look of the river by measuring topography. With the long section of the measurement results can be studied and determined the riparian line of the river.
5. Identify the location of the river, whether including urban areas or outside urban areas to determine the width riparian.
6. Identify the location of the river, whether including river that have embankments or not, to determine the width riparian.
7. Identify the location of the river with wide calculating the Watershed to determine the width riparian.
8. Review the design flood discharge with return period of two years, five years and ten years in order to determine the condition of the water level of the river hydraulics.
9. Study comprehensive of riparian and presentation in the form of line drawings riparian, area maps and extensive line of riparian land affected.

LITERATURE REVIEW

The legal basis for the guidelines used in the determination of this river is the riparian line:

1. Regulation of the Government of the Republic of Indonesia Number 38 year 2011 on the river [4]
2. Regulation of the Minister of Public Works Number 63 / PRT / 1993 on the riparian line of the river, the area benefits of the river, local control of the river and the former river [1]
3. Circular letter of the Minister of Public Work year 2012 on Technical Guidelines for Determination of Riparian Rivers [5]
4. Regulation of West Java Number 8 Year 2005 On Line Riparian Water Resources [6]

Based on the legislation on riparian line of the river is used as the legal basis in determining the riparian line of the river, then to facilitate the analysis, made the types of riparian line of the river under the conditions of the research site as follows:

- a. Type 1, urban areas, do not have embankment, river depths between 3 to 20 meters, then the riparian line drawn at least 15 meters from the river bank to the left and right
- b. Type 2, the urban area, there are embankment, river depths between 3 to 20 meters, then the riparian line drawn at least 3 meters from outside foot embankment to the left and right.

- c. Type 3, the urban area, one section of the river has embankment and other section do not have embankment, river depths between 3 to 20 meters, then the riparian line drawn at least 15 meters from the riverbank who do not have embankment and at least 3 meters from the foot of embankment to the riverbank beyond their banks.
- d. Type 4, outside of urban area, there are no embankment, Watershed area smaller than 500 km², the riparian line drawn at least 50 meters from the river bank to the left and right.

RESULTS AND DISCUSSION

A. Determination of Riparian Line

Based on the analysis of the applicable legislation can be seen a minimum riparian lines for research locations. Some of them are as follows:

1. Segment Citanduy River around the Islamic Centre (P. 1 + 250) - City of Banjar

The condition:

- Regions : urban
- Embankment : no embankment
- The depth of the river : ± 12.0 meters
- Facility road : the right side of the river
- Conditions left : ± 23.0 meters to the left of the river there is land / garden
- The condition of the right : there are Islamic Centre region.

Conditions such as these river sections including type 1, where the width riparian taken a minimum 15 meters from the river bank to the left and right of the river.

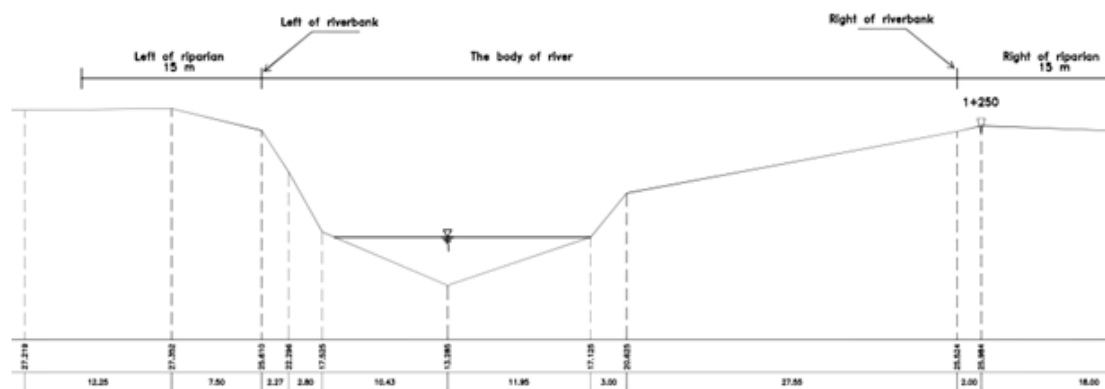


Figure 2. Cross Section Riparian Line Type 1 (P 1 + 250) - City of Banjar

2. Segment Citanduy River downstream Weir Petaruman (P. 7 + 050) - City of Banjar

The condition:

- Regions : urban
- The embankment : there are embankment

- The depth of the river : ± 5.10 meters
- Facility road : the left and right of the river (outside embankment)
- The condition to the left : in the form of land / garden
- The condition right : in the form of garden land

The condition such as these river sections including type 2, where the width riparian taken a minimum 3 meters from outside of foot embankment to the left and right.

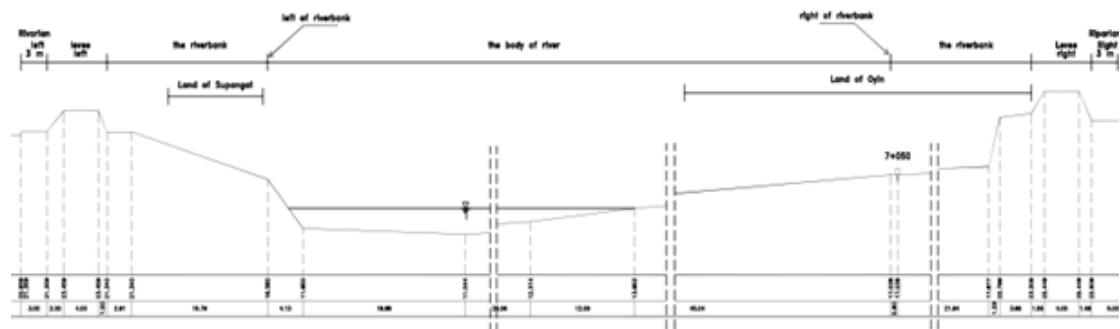


Figure 3. Cross Section Riparian Line Type 2 (P. 7 + 050) - City of Banjar

3. Segment Citanduy River in Mulyasari District Petaruman (P. 8 + 500) - City of Banjar

The condition:

- Regions : urban
- The embankment : there are the river embankment on the right, left no river embankment
- The depth of the river : ± 8.75 meters
- Facility road : at the top right embankment of the river
- The condition to the left : in the form of land / garden
- The condition right : in the form of Jati garden

The condition such as these river sections including type 3, wherein the width riparian taken a minimum 3 meters from the foot of embankment outside of the right side of the river and a minimum 15 meters from the river bank to the left.

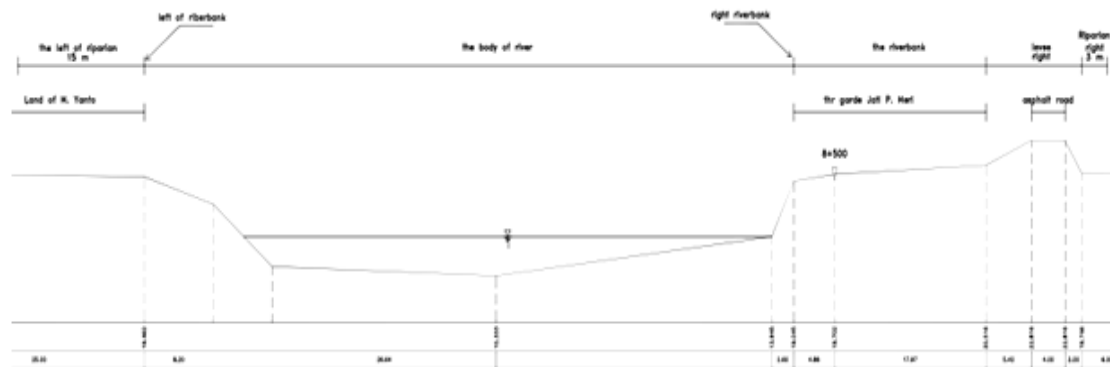


Figure 4. Cross Section Riparian Line Type 3 (P. 8 + 500) - City of Banjar

4. Segment Citanduy River at P.0 + 000 to + 350 P.3 (upstream bridge Islamic Centre until the bridge before the Regional General Hospital) and P. 8 + 200 to P. 8 + 400 - City of Banjar

The condition:

- Regions : urban
- The embankment : no embankment
- The depth of the river : ± 4.0 to 10.0 meters
- Facility road : the right and left of the river
- The condition to the left : in the form of garden and home
- The condition of the right : there is garden land, public and social facilities (terminals, mosques, hospitals, drinking water \ association)

The condition such as these river sections including type 1, where the width riparian taken a minimum fifteen (15) meters from the river bank to the left and right of the river.

5. Segment Citanduy River in P. 3 + 450 to + 950 P. 3 (bridge before hospital until before the market the city Banjar) - City of Banjar

The condition:

- Regions : urban
- The embankment : no embankment on the right, there are embankment on the left of river
- The depth of the river : ± 5.25 to 10.0 meters
- Facility road : on the right and left of the river
- The condition to the left : in the form of land / garden and houses
- The condition right : in the form of public and social facilities (hospitals, soccer field, garden the city, etc.)

The condition such as these river sections including type 3, wherein the width riparian taken a minimum 3 meters from the foot of embankment outside of the left

side of the river and a minimum 15 meters feet from the riverbank right.

6. Segment Citanduy River P. 3 + 950 to 8 + 000 (before the Banjar to the border the city market Village of. Mulyasari, District Petaruman) - City of Banjar

The condition:

- Regions : urban
- The embankment : there are embankment
- The depth of the river : ± 5.0 to 12.0 meters
- Facility road : the left and right of the river
- The condition to the left : in the form of land / garden, home and office
Central River Region Citanduy
- The condition right : in the form of agricultural lands, houses,
markets

The condition such as these river sections including type 2, where the width riparian taken a minimum 3 meters from outside of foot embankment to the left and right.

7. Segment Citanduy River at P8 + 000 + 200 up to P8 and P8 + 500 up to P8 + 650) - City of Banjar

The condition:

- Regions : urban
- The embankment : there are the river embankment on the right,
left no river embankment
- The depth of the river : ± 3.20 to 8.25 meters
- Facility road : on the right river
- The condition to the left : in land / plantation residents
- The condition right : in land / plantation residents

The condition such as these river sections including type 3, wherein the width riparian taken a minimum 3 meters from the foot of embankment outside of the right side of the river and a minimum 15 meters from the river bank to the left.

8. Segment Citanduy River at P.0 + 000 + 000 up to P.7 – Tasikmalaya-Ciamis Regency

The condition:

- Regions : outside of urban
- The embankment : no embankment
- The depth of the river : ± 1.9 to 4.5 meters
- Watersheds Area : 238.0 km²
- Facility road : the left river
- The condition to the left : in the form of gardens, houses and road
- The condition right : in the form of gardens, fields, houses, tombs

The condition such as these river sections including type 4, wherein the width riparian taken at least 50 meters from the river bank to the left and right of the river.

9. Segment Citanduy River in Cihaurbeuti (P. 5 + 900) – Tasikmalaya-Ciamis Regency

The condition:

- Regions : outside of urban
- The embankment : no embankment
- The depth of the river : ± 3.64 meters
- Watersheds Area : 238.0 km²
- Facility road : the left river
- The condition to the left : the form of shrubs
- The condition right : in the form of garden / land owned by citizens

The condition such as these river sections including type 4, wherein the width riparian taken at least 50 meters from the river bank to the left and right of the river.

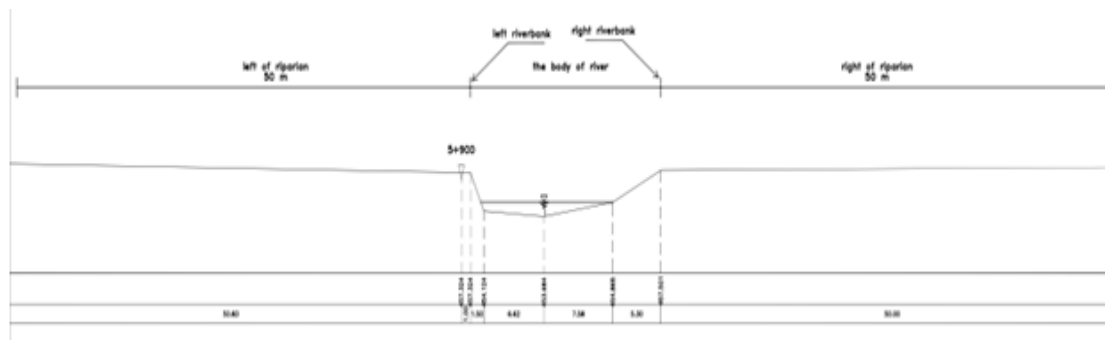


Figure 5. Cross Section Rivarian Line Type 4. (P. 5 + 900) – Tasikmalaya-Ciamis Regency

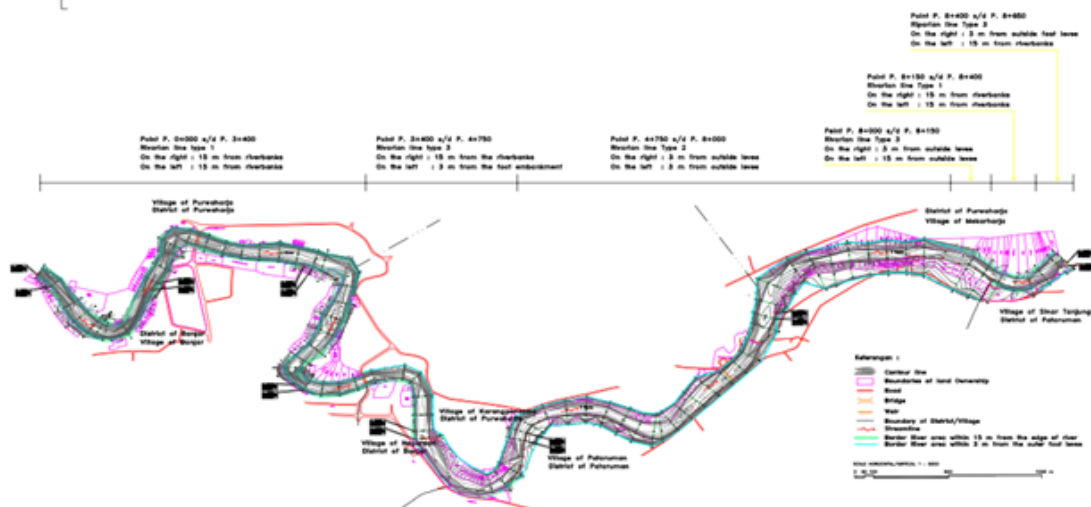


Figure 6. The Plan Citanduy Rivarian Line - Segment City of Banjar

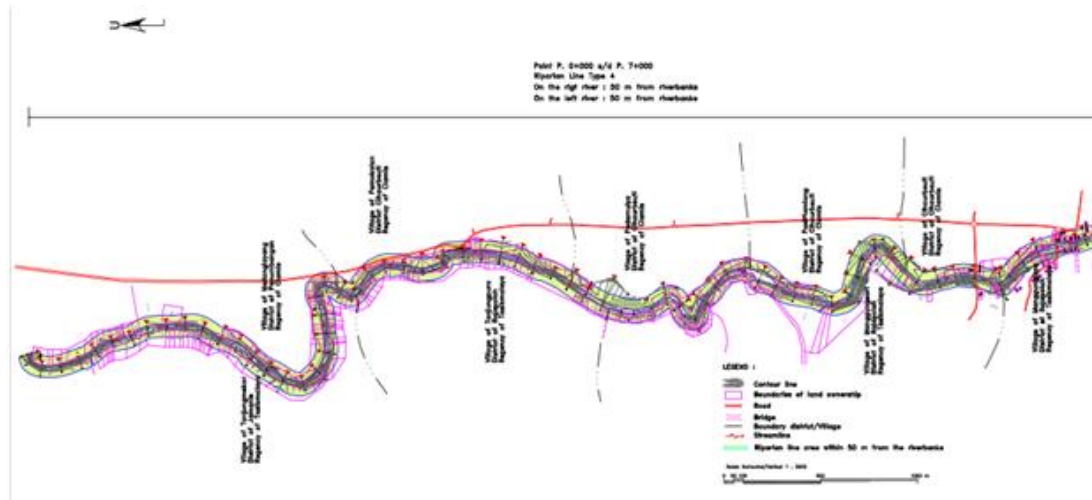


Figure 7. The Plan Citanduy Rivarian Line - Segment Regency of Ciamis-Tasikmalaya

B. The land area affected riparian boundary

Based on the riparian of the river, it can be seen that the land area affected riparian boundary (near the riverbed) and the land that is not subject to riparian river. The recapitulations of the affected land riparian to each segment are:

1.	Segment Citanduy River on the left- City of Banjar	= 131,865.07 m ²
2.	Segment Citanduy River on the right - City of Banjar	= 119,398.82 m ²
3.	Segment Citanduy River – Regency of Ciamis	= 203,074.23 m ²
4.	Segment Citanduy River – Regency of Tasikmalaya	= 199,219.83 m ²
Total		= 653,557.95 m ²

Of the total land affected riparian, 62746.21 m² area in the form of public facilities and the rest (590,811.74 m²) in the form of private property.

C. Map Riparian Line Regions

With the help of GIS software do digitization of the results of taking the measurements of topography and overlay between topography measurement results that have been plotted riparian line river with such maps downloaded earth with Google earth. The results in the form of a map overlay riparian area, as shown in the following figure.

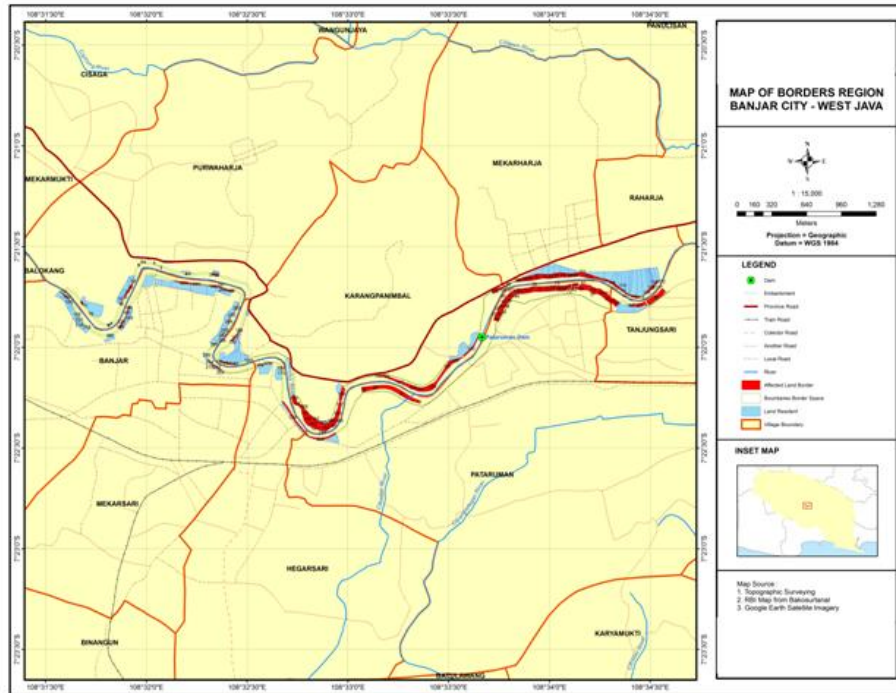


Figure 8. Map of Rivarian Line Regions, City of Banjar, West Java Province

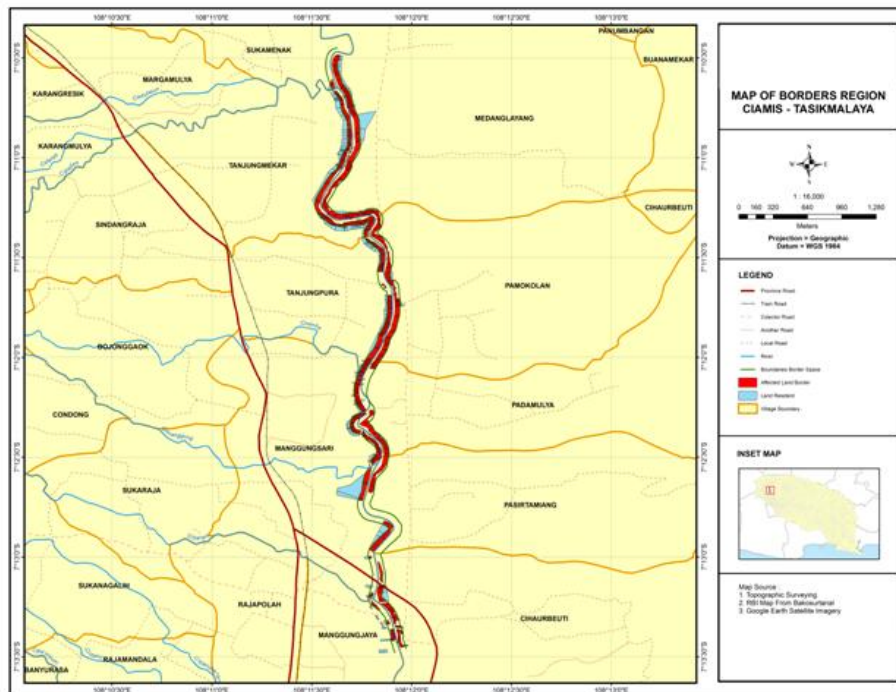


Figure 9. Map of Rivarian Line Regions, Regency of Ciamis-Tasikmalaya, West Java Province

With the results of the research of this riparian line, then there are several affected land, be it land, including public facilities and land owned by residents. To resolve this can be done several ways, among others:

1. Make a flood embankment By creating flood embankment, the affected land lines will be more narrow riparian according to applicable regulations
2. Utilize riparian areas according to the Minister of Public Works Number 63 year 1993 with the following provisions:
 - a. For cultivation, with the type of plant that is permitted.
 - b. For commercial activities, excavation and backfilling.
 - c. For installation of billboards, counseling and warning boards, as well as signs of work:
 - d. For a range of electrical cable installation, cable telephone and drinking water pipes.
 - e. Pole erection or foundation for roads / bridges both general and train.
 - f. For the implementation of a social nature and society that does not adversely affect the sustainability and security of physical function as well as the river.
 - g. For the construction of traffic infrastructure and building water collection and disposal of water.

Land usage in the area of the benefits of the river must obtain permission from related institution such as the Director General of Water Resources, the Governor and Regent or Mayor in accordance with an arbitrary region.

CONCLUSION

From the results and discussion, it can be concluded as follows:

1. A review of riparian line of the river can be presented as shown in figure 6 to 9.
2. There are four broad categories of riparian line at the research site.
3. The width of the riparian line can be narrowed down by the river embankment
4. Residents around the riparian river can take advantage of riparian land in accordance with applicable regulations and following approval from the related institutions.

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